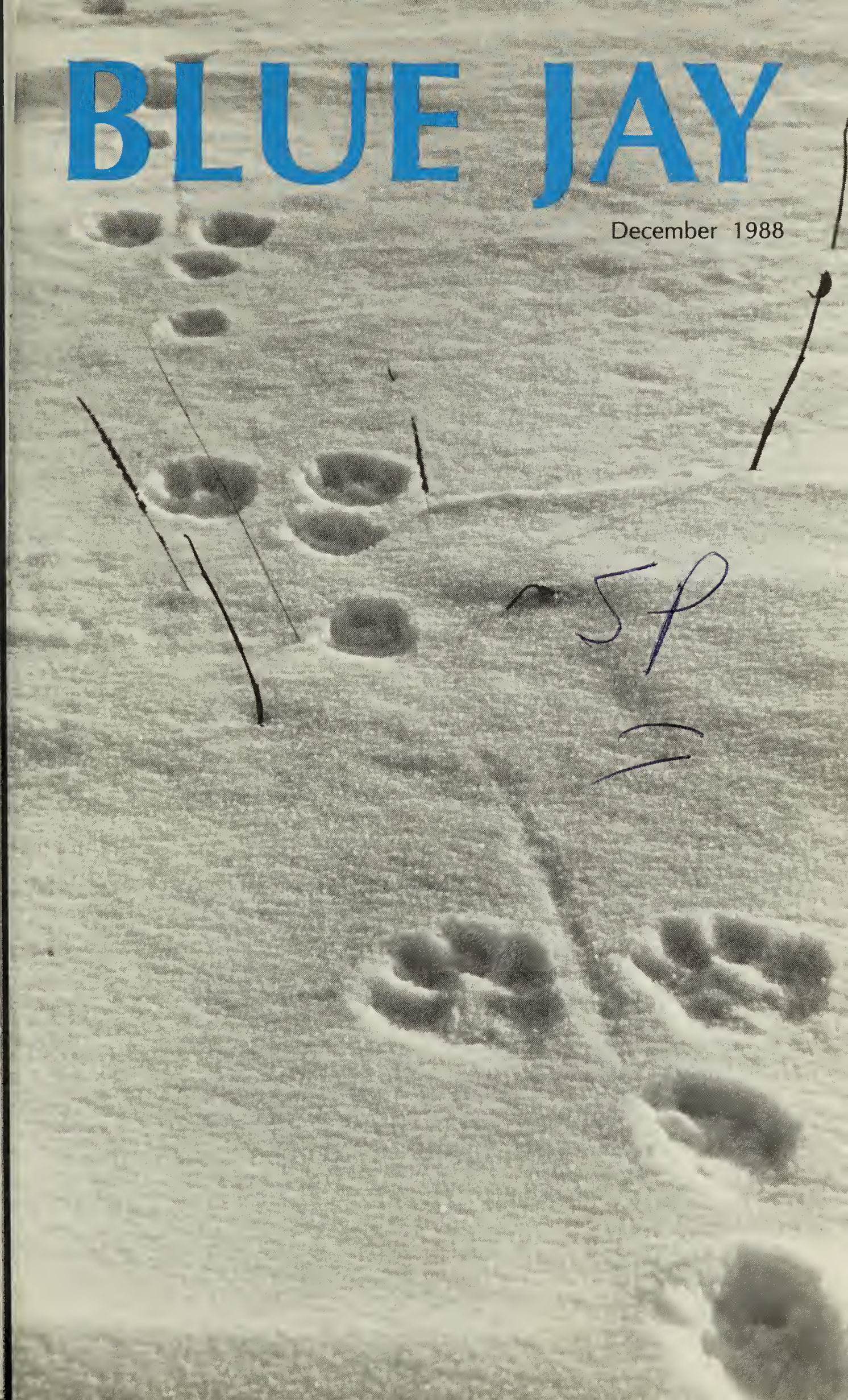
BLUE JAY

December 1988



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BLUE JAY

Vol. 46 No. 4 December 1988 169-230

EDITOR'S NOTE:

AUTHOR'S GUIDLINES:

Please forgive the tangle which I made with the amendment to the author's guidelines (page 108, September 1988 issue). In trying to correct an earlier error I referred to the passive and active *tense*; this should have read that style manuals encourage the use of the active *voice* over the sometimes ambiguous passive *voice*.

RAPTOR BANDING — Regarding the note on page 177.

Please send reports or inquiries for further information to C.S. Houston, 863 University Drive, Saskatoon, Sask. S7N 0J8.

THIS ORGANIZATION RECEIVES FUNDING FROM

SASKATCHEWAN LOTTERIES

MILLER CHRISTY, NATURALIST AND HISTORIAN

C. STUART HOUSTON, 863 University Drive, Saskatoon, Saskatchewan S7N 0J8

Robert Miller Christy's important observations in Manitoba and Saskatchewan have been almost forgotten. The story of my investigations into his achievements is long and rather complicated.

In 1975, while preparing my introduction to *Ernest Thompson Seton in Manitoba, 1882 - 1892*, I contacted Eleanor Pratt, Director of the Ernest Thompson Seton Museum, Boy Scouts of America, at Cimarron, New Mexico.[2] Pratt mentioned that their museum contained a duplicate copy of Thomas Hutchins' manuscript on Mammals and Birds. She kindly sent me the title page of the proposed *Observations on Hudson's Bay* which Seton's friend R. Miller Christy had prepared for possible joint publication in England, Canada and the United States in 1910 (Fig. 1).

In October 1985 my wife, Mary, and I tracked down further evidence in the library of the Linnean Society at Bur-

Miller Christy

lington House in London, England. We learned how Christy had answered a query placed in the *Journal of Botany* in 1921, by the editor, James Britten.[1] Britten's query, under the title of "An Early Hudson's Bay Collector", was as follows:

"In the Banksian Herbarium are a considerable number of sheets endorsed in Banks's hand, "Hudson's Bay 1773." We had always assumed that these were of Bank's own collecting, and it was only lately that, the matter having attracted notice, it became evident that he never went to Hudson's Bay, nor does his correspondence throw any light on their acquisition ... Who collected in Hudson's Bay in 1773?"

The answer was provided by Miller Christy, in a note titled "An Early Hudson Bay Collector" in the same journal the next year: "In reference to the plants collected in the Territories of the Hudson Bay Company in 1773, and now in the Banksian Herbarium, I had no idea that any such plants existed. They were collected by one Thomas Hutchins, a chief-factor in the service of the Hudson Bay Company, who visited England in or about the year indicated, bringing with him the manuscript of a volume entitled "Observations on Hudson's Bay," which is still preserved in the Library of the Company at its London offices. I have long been interested in this volume, which gives a long and valuable account of Hudson Bay, its history, natives, trade, climate, fauna, flora, etc. Many years ago my friend Mr. Ernest Thompson Seton and myself [Christy] were permitted to have a copy made of it, with a view to its publication under my general editorship, and the help of a specialist in each department of knowledge treated. Unfortunately however, the work, though nearly ready for publication, has not yet been issued. On the outbreak of war, I sent the MS. to Mr. Seton in New York, where he is arranging for its publication. With this volume, Hutchins must have brought some small collections of specimens, including the plants in question; for there is, in the Fish Galleries at the Museum, at least one fish (the type-specimen of some well-known species, if I recollect rightly); and, in the Bird Galleries, there are, I believe, several birds of his collecting. Doubtless before Hutchins returned to Hudson Bay he either sold or presented these collections to Banks. In regard to the plants: it would probably be found, if one referred to Hutchin's MS., that all, or most of them, are described in the botanical section thereof. In the editing of this, I was assisted by the late Prof. John Macoun, of Ottawa, who identified, so far as was possible, the species mentioned by Hutchins; the latter was not in any sense a scientific (scarcely even a popular) botanist."[1]

In the note quoted above, Miller was wrong in giving all the credit to Hutchins for the beautifully written and informative nature notes from Hudson Bay, which accompanied a large box of natural history specimens sent back to England in 1772. For over a century this important manuscript had been ascribed to Thomas Hutchins (1742-1790), who was the Hudson's Bay Company surgeon at York Factory from 1766 to 1773 and then chief at Albany from 1774 to 1782. There are at least five slightly different "original" versions extant, four in the Hudson's Bay Company Archives in Winnipeg and one in the Royal Society library in London, England. Subsequent research by Professor Glyndwr Williams has demonstrated that most of the specimens were collected by Andrew Graham (1733-1815). Most of the text was written by Graham in 1772, then copied and added to by surgeon Thomas Hutchins.

In 1969 the Hudson's Bay Record Society published *Andrew Graham's Observations on Hudson's Bay 1767-1791*, edited by Glyndwr Williams, with an introduction by Richard Glover.[16] Although the two contemporaries had collaborated, Hutchins had copied Graham's notes on 99 species of birds, adding his own for 12 additional species. The collaboration between the two naturalists was sorted out more fully by Glyndwr Williams in the spring 1978 issue of The Beaver, in an article entitled "Andrew Graham and Thomas Hutchins, Collaboration and Plagiarism in 18th Century Natural History".[17]

But how did this Englishman, Miller Christy, and a North American, Ernest Thompson, come to collaborate in their unsuccessful project to publish the Graham-Hutchins manuscript? What do we know about Christy?

Ernest E. Thompson's family had emigrated from the River Tyne near Newcastle to a farm near Lindsay, Ontario in 1866, just before Ernest's sixth birthday. Four years later the family moved to Toronto. Soon after his 19th birthday, Ernest went to London, England, to study art for two years. Although his autobiography claims that he added the historic family name of Seton on his 21st birthday, he wrote his first articles as Ernest E. Thompson and later as Ernest Seton-Thompson. Only late in 1901 did he finally and legally assume the name by which he became the world's most successful nature author, Ernest Thompson Seton. For the reader's benefit, I will refer to him simply as Seton.

On weekends Seton would visit with his cousin by marriage, George Porteous, at Saffron Walden, 42 miles out of London. One of Porteous' subordinates was a young man, R. Miller Christy, nine months younger than Seton, who shared his natural history interests. Seton and Christy went on many field trips together.

Seton's Manitoba observations are readily available in *Ernest Thompson Seton in Manitoba, 1882 - 1892*, published by the Manitoba Naturalists Society.[13] A superb biography, *Black Wolf*, by Betty Keller, appeared in 1984, and another, *The Chief, Ernest Thompson Seton and the Changing West*, by H. Allen Anderson, was published in 1986. Here is an attempt to place the other partner in the failed publishing effort, Miller Christy, in proper biographical perspective.

Robert Miller Christy was born near Chelmsford in Essex, England, in May 1861. (He ceased using "Robert" or even the initial "R" in the late 1880s.) From childhood he evinced a remarkable interest in natural history, beginning his early collection of conchological and ornithological specimens while at Bootham School in York.

As a young man, Christy was selected by the James Hack Tuke Emigration Committee to go to the United States to assist the settling of starving families sent out following the Irish Potato Famine of 1881 - 82.[14] He left Liverpool on 5 July 1883 and arrived in New York on 14 July. Following the completion of his duties, he continued on to visit Manitoba and his friend, Ernest E. Thompson, who had moved the previous year to his brother's farm at Carberry.

On 8 and 10 August, Seton and Christy visited Percy Criddle, who had settled the previous year near the confluence of the Souris and Assiniboine Rivers, southeast of Brandon. Seton and Christy made up study skins of birds and mammals. Seton tells that they demonstrated their techniques to

the Criddle sons, Norman and Stuart, only 8 and 5 years of age, both of whom later became well known naturalists.

On 18 September Christy visited Brandon (population then under 4000) for the first time. He left Brandon on 1 October for the Provincial Agricultural Exhibition at Portage La Prairie (population 5000) for two days. On 18 October he went to Winnipeg. Later in the month he went to Brandon, Shoal Lake, Birtle, Fort Ellice and then south to Elkhorn.

Christy's article in *Nature* on 3 January 1884 concerned the absence of earthworms from the prairies of the Canadian North-west, between Winnipeg and the Rockies, whereas they abounded at Toronto and in other parts of Ontario.[3] [Earthworms had already been introduced from Europe to Ontario and soon were brought by settlers to Manitoba.] Possible reasons for their absence were the great cold of winter and the prevalence of prairie fires in spring and autumn. He quoted Charles Darwin's statement that earthworms could descend three or four or even seven or eight feet below the surface in cold countries. Christy concluded with the suggestion that the ground squirrels

with their extensive burrows may to some extent have accomplished the natural cultivation of the soil in the way worms were accustomed to do elsewhere.

Christy returned in 1884, coming by train via Minneapolis-St.Paul and crossing the border at Pembina-Emerson on 13 June. He took the new railroad west as far as Maple Creek where he shot a Solitary Sandpiper and a Brewer's Blackbird on 10 July and also found a Catbird nest at Moose Jaw. He noted how the Cliff Swallows quickly built nests around the watertanks and under many of the bridges within a year of the railway being constructed. The Barn Swallow was as yet very rare.

During his trip west in 1884, Christy stopped at Indian Head to visit the famous 54,000 acre Bell Farm, the property of the Qu'Appelle Valley Farming Company formed in 1881 and managed by Major W.R. Bell. Christy provided detailed information about this gigantic farm: it had been purchased for $1.25 per acre on the condition that not less than 4000 acres were to be broken and brought under cultivation annually for 5 years. In 1882, 2400 acres had been broken and in 1883 half of this acreage was sown with oats and the other half with wheat. The wheat gave an average yield of 19.5 bushels per acre and sold for $1.01 per bushel. In 1883, 4600 additional acres were broken so that in 1884, 5500 acres were sown with wheat, 1200 with oats and 300 with flax. The farm kept 193 horses for the plowing. They had 22 binders by Deering and 25 by Harris of Brantford. During the summer 170 men were employed at $30 per month and board. The cost of producing a bushel of wheat was 33 cents and the freight to Montreal was another 32 cents. However, the company was at his time of writing dividing their large estate into 250 separate farms of 213 acres each.[2]

Christy's 208-page book, *Manitoba Described*, was published by Wyman and Son's in London in 1885, as an incentive to those thinking of settling in the new province. He told of the vast flocks of waterfowl in spring and fall migration, mentioning thousands of ducks on the Rapid City trail on 11 and 12 October.[4] He also published "Notes on the Birds of Manitoba" in *The Zoologist* for April 1885, reprinted in *The Ornithologist and Oologist* in May and June.[5] His rambling account of his travels mentioned 56 species of birds. The American Crow was uncommon in

summer, but became more noticeable when it formed flocks in fall. A loose group of 30 kestrels passed through Carberry on 7 September 1884. A friend shot a Passenger Pigeon on 30 August 1884, the only specimen that he saw. Sandhill Cranes still bred "pretty commonly" in the swamps of the Carberry sandhills and along the Upper Assiniboine River. Last-seen dates for fall migration were given for a number of species.

On his return to England Christy exhibited to the Linnean Society a collection of Lepidoptera and Hymenoptera, and presented 156 specimens. He gave a paper "On the Methodic Habits of Insects when Visiting Flowers" and another "On the power of penetrating the bodies of animals possessed by the seed *Stipa spartea*," the former of which was published in the *Linnean Society Journal*, and the latter in *Knowledge*. Christy described how "no known seeds, probably, employ means more atrociously and barbarously cruel than those employed by the seed of a species of grass, known as *Stipa spartea*, which is excessively common over a large extent of the North American prairies. Briefly described, this villainous instrument is nothing more or less than an automatic vegetable corkscrew, with an exceedingly sharp point, and capable, by its own action, of boring itself into the bodies of living sheep and other animals, and of finally killing them by so doing. The plant ... inhabits the drier portions of the plains and prairies of the west."[6]

Miller Christy made his third visit in 1887. He climbed to a Great Horned Owl nest along the Little Whitesand River near present Yorkton on 5 May and found two young owls with 20 dead Northern Pocket Gophers lined up around the nest. On 18 May at Shoal Lake, Manitoba, he visited the pelican colony and watched a Thirteen-lined Ground Squirrel trying to catch a Vesper Sparrow.

In *The Field* for 14 April 1888, after returning from his third trip, Christy wrote a long essay about "Sport in Manitoba", filling three columns of tiny print on a very large page.[7] He described the opportunities for hunting, telling how the Greater Prairie Chicken appeared at Pembina on the United States boundary in 1883, reaching Winnipeg and Portage La Prairie in 1884. The Upland Sandpiper was then "abundant ... its long-drawn mellow whistle ... one of the most familiar and melodious natural sounds heard on the prairies." An excellent table bird, it was often shot by gunners. Christy recommended that naturalists take a trip to Shoal Lake, 25 miles from Stonewall, [not to be confused with the present village of Shoal Lake] where F.W. Robertson had a hotel and could take visitors in a small steam launch to an island where hundreds of pelicans nested and another with cormorants. Willow Ptarmigan were then "abundant" in winter as far south as Lake Manitoba. Christy told of lakes "black with ducks" in September and October. Perhaps his most important record was the nest of a Hooded Merganser in a hollow tree, evidently found near Carberry.

His major paper "Why are the Prairies Treeless?" was published in the *Royal Geographical Society Proceedings* for 1892. Christy disagreed with Professor Whitney of Iowa who said that the Manitoba part of the prairies was treeless because the area had been a lake bed with extreme fineness of the soil particles. Christy believed that fire was the explanation: "... by far the larger portion of the whole area of the prairies gets burned over annually." At the time of his visit he noted that even two narrow wheel marks of carts with grass growing between helped to stop fires.

"Young trees spring up annually, only to be at once burned." He quoted his friend, Ernest E. Thompson [Seton]: "If a piece of prairie, almost anywhere, be protected for two consecutive years, it will be found covered with a growth of popular and willows; therefore I conclude that, but for the fires, the whole country would be covered with bush." Christy noted that the aspen "have great vitality in their roots and repeatedly send up fresh shoots after the annual fires, until death from exhaustion ensues." But "growth is slow and destruction by fire is swift." Water and sandhills equally stopped fire; good clumps of spruce grew in the sandhills south of Carberry. The subsidiary causes of the fires were the "exceptional dryness, the relatively level ground and the high winds on the prairies."[10]

Christy settled down as a partner in the printing firm of Hayman, Christie and Lilley Ltd.in Chelmsford. In 1889, he was elected a Fellow of the Linnean Society of London, and thereafter used "F.L.S." after his name. In 1890, he wrote *The Birds of Essex*, the chief authority on the topic for 30 years, and the following year, *A Catalogue of Local Lists of British Birds, Arranged Under Counties*.[8,9] He served as president of the Essex Naturalists' Club from 1905 to 1907, and from 1910 until his death was one of the permanent vice-presidents. From 1917 to 1919 he was editor of *The Essex Naturalist*. He was also a member of council of the Essex Archaeological Society. He was knowledgeable about the history of arctic exploration and edited important books for the Hakluyt Society, including *The Voyages of Captain Luke Foxe of Hull, and Captain Thomas James of Bristol, in Search of a North-West Passage, in 1631-32*, and *On 'Busse Island'*, one of the Lost Islands of the Atlantic. His last article, "Captain William Hawkeridge and His Voyage in Search of a North-west Passage in 1625", appeared in *Mariner's Mirror* in 1927. Christy also wrote about banking, clocks, brasses, trade signs and Roman roads. He compiled the *Handbook for Essex County*. He was one of the founders of, and a frequent contributor to, *The Essex Review*. Natural History notes were published in *The Essex Naturalist, Field, Zoologist, Journal of Botany, Journal of Ecology, New Phytologist, and Journal of the Linnean Society*. He offered hospitality to naturalists at his bachelor's home at Chignal St. James, near Chelmsford. He died on 25 January 1928, following surgery.[15]

Had Christy and Seton published Andrew Graham's manuscript, they would have followed all their predecessors and given inappropriate credit to Thomas Hutchins. Perhaps it is as well that this project awaited the scholarly attention of Glyndwr Williams and Richard Glover in 1969. Nevertheless, Christy's researches concerning northern and western Canada remain a useful contribution worthy of our attention. Christy's observations, and more particularly those of his friend Seton, give us an important and fairly complete picture of the bird life in Manitoba at the time of beginning settlement.

[1] BRITTEN, J. 1921. An early Hudson's Bay collector. *Journal of Botany* 59:238.

[2] CHRISTY, R.M. 1884. Notes on a visit to the Bell Farm, Assiniboia. *The Field* 64:899.

[3] CHRISTY, R.M. 1884. On the absence of earthworms from the prairies of the Canadian North-west. *Nature* 29:213-214.

[4] CHRISTY, R.M. 1885. Manitoba described. London: Wyman & Sons.

[5] CHRISTY, R.M. 1885. Notes on the birds of Manitoba. *The Zoologist*, series 3, 9:121-133. Reprinted in *Ornithologist and Oologist* 10:76-78,91-94.

[6] CHRISTY, M. 1888. A botanical atrocity. *Knowledge* 11:247-249.

[7] CHRISTY, M. 1888. Sport in Manitoba. *The Field*, 14 April, 543-544.

[8] CHRISTY, M. 1890. The birds of Essex. Essex Field Club Special Memoirs, vol. 2. 302 pp.

[9] CHRISTY, M. 1891. A catalogue of local lists of British birds arranged under counties. London: Mayman, Christy & Lilly. 42 pp.

[10] CHRISTY, M. 1892. Why are the prairies treeless? *Royal Geographical Society Proceedings* 14:78-100

[11] CHRISTY, M. 1922. An early Hudson Bay collector. *Journal of Botany* 60:336-337.

[12] HOUSTON, C.S. 1980. Introduction, vxv, in Ernest Thompson Seton in Manitoba, 1882-1892. Winnipeg: Manitoba Naturalists Society.

[13] THOMPSON [-SETON], E.E. 1891. The Birds of Manitoba. *Proceedings United States National Museum* 13:457-643.

[14] THOMPSON, P. 1927-28. Robert Miller Christy. Proceedings of the Linnean Society of London, 1927-28, 112-113.

[15] THOMPSON, P. 1929. Miller Christy, F.L.S., an obituary. *Essex Naturalist* 22:110-112, plate 8.

[16] WILLIAMS, G., ed. 1969. Andrew Graham's observations on Hudson's Bay, 1767-91. London: Hudson's Bay Record Society. 423 pp.

[17] WILLIAMS, G. 1978. Andrew Graham and Thomas Hutchins: Collaboration and plagiarism in 18th-century natural history. *Beaver* 308.4:4-14.

RAPTOR BANDING

Of all the birds that are raised in Saskatchewan, two of the greatest travellers are the Osprey or "Fish Eagle" of northern lakes and the Swainson's Hawk or "Gopher Hawk" of the plains. Anyone seeing individuals of either species is requested to look carefully for bands on each leg. Banding of these two species in Saskatchewan took on a new dimension in 1988, when we began using additional anodyzed, double-rivet aluminum color bands, with the potential for learning much more about these two interesting long-distance migrants.

In the Loon Lake area on 4-5 June 1988 we caught 7 adult Ospreys on their nest (6 females and 1 male), placing a regular aluminum band on one leg and a *black* band with a readable number-letter combination on the other leg. Similarly, aluminum and *green* color bands were placed on 20 nestling Ospreys in July.

Within the area of the 72N Kindersley mapsheet (1:250,000 scale) we placed 107 *green* bands on nestling Swainson's Hawks, in addition to the regular aluminum band on the other leg. Most of these nests were found by Jean Harris, Dean Francis or Bill Marjerrison.

Frankly, we would feel fortunate to locate four of the 107 as breeding birds in 1989, because nestlings disperse so widely, and because few breed when only one year old. If you can help us to locate just a few breeding birds of each species, with color bands, that can be followed year by year, this would have the potential to add much more to knowledge than the simple banding program of past years. In addition, we hope the extra color band, with easily readable letters or numbers on the other leg, will more than double, perhaps quadruple, the recoveries obtained from the Swainson's Hawk wintering grounds in Argentina and the Osprey wintering grounds in Ecuador and Columbia.

A CHECKLIST OF THE MOTHS OF SASKATCHEWAN

PART 4 - SNOUT MOTHS (HERMINIINAE, RIVULINAE, HYPENODINAE, AND HYPENINAE)

RONALD R. HOOPER, Box 757, Fort Qu'Appelle, Saskatchewan. S0G 1S0

In the following article these abreviations are used: s south, n north, w west, e east, CNC the only Saskatchewan records of the species known to the author are in the Canadian National Collection in Ottawa.

Owlet Moths - NOCTUIDAE

This is by far the largest family of moths in Saskatchewan. It includes the destructive cutworm and armyworm moths, but the majority of the species are not considered to be economic pests.

Owlet moths are usually heavy-bodied, and vary in size from 10 to 145 mm in wing expanse. Most species have a black spot in the middle of the hindwing on the underside, and a narrow post-median band crossing the wing. The forewings are usually a drab brown colour that matches the trunks of trees. The antennae are usually slender.

Most Owlet Moths have smooth caterpillars and smooth pupae.

The first four sub-families are called "Snout-Moths" because of the long, curved, and fringed palpi on the head. These are small moths, with the Hypenodinae being the smallest.

The Pyralid Moths (Pyralidae) are also called "Snout-Moths," but their long palpi are usually straight, rather than curved.

Many species of Snout-Moths have strange feeding habits, with the larvae feeding on decomposing vegetable matter, fungi or debris rather than on green leaves.

HERMINIINAE

American Snout-Moth - *Idia americalis* (Gn.) — throughout Saskatchewan.

Powdered Snout - *Idia aemula* Hbn. — n Saskatchewan, s to Maryfield, Fort Qu'Appelle and Meadow Lake area.

Glossy Black Idia - *Idia lubricalis* (Gey.) — Oxbow, Big Muddy Lake, Tantallon, Otter Rapids and La Ronge.

Immaculate Reabotis - *Reabotis immaculalis* (Hulst) — Swift Current (CNC), and Rutland (CNC).

Dark-banded Owlet - *Phalaenophana pyramusalis* Wlk. — central Saskatchewan n to Sturgeon Landing, s to Moose Mountain Park and Punnichy.

The Canadian Zanclognatha - *Zanclognatha lutalba* (Sm.) — s Saskatchewan n to Norquay.

Lesser Luteous Snout - *Chytolita petrealis* Grt. — throughout Saskatchewan.

Angle-striped Snout-Moth - *Hormisa absorptalis* Wlk. — e Saskatchewan w to Fort Qu'Appelle and Red Earth.

Two-striped Snout-Moth - *Hormisa bivittata* (Grt.) — Shoal Lake.

Louisiana Snout-Moth - *Hormisa louisiana* (Fbs.) — Saskatoon (CNC).

Tufted Snout - *Phalaenostola metonalis* Wlk. — s Saskatchewan n to Otter Rapids, and Buffalo Narrows.

Hanham's Snout-Moth - *Phalaenostola hanhami* (Sm.) — e Saskatchewan w to Regina, Norquay, Somme and Red Earth.

Variable Snout-Moth - *Bleptina caradrinalis* Gn. — s Saskatchewan n to Norquay and Loon Lake.

Even-lined Renia - *Renia favipunctalis* (Gey.) — Tantallon, Stockholm and Maryfield.

Renia sp. (near *sobrialis* (Wlk.)) — Tantallon.

Angulated Snout-Moth - *Palthis angulalis* (Hbn.) — n Saskatchewan, s to Tantallon, Fort Qu'Appelle and Pike Lake.

RIVULINAE

Yellow Snout-Moth - *Rivula propingualis* Gn. — central Saskatchewan n to La Ronge, s to Roche Percee, Fort Qu'Appelle and Loon Lake.

Pale-edged Snout-Moth - *Mycterophora inexplicata* (Wlk.) — Harlan (ne of Lloydminster).

HYPENODINAE

Broken-line Hypenodes - *Hypenodes fractilinea* (Sm.) — Nipawin (CNC).

HYPENINAE

Toothed Snout-Moth - *Bomolocha bijugalis* (Wlk.) — Fort Qu'Appelle and Meadow Lake Provincial Park.

Variegated Snout-Moth - *Bomolocha palparia* (Wlk.) — Tantallon, Kamsack and Greenwater Provincial Park.

White-lined Bomolocha - *Bomolocha abalienalis* (Wlk.) — Maryfield.

Deceptive Bomolocha - *Bomolocha deceptalis* (Wlk.) — Norquay.

Pale-banded Snout-Moth - *Bomolocha atomaria* (Sm. — central Saskatchewan n to Erwood and Buffalo Narrows, s to Tantallon and Frenchman Butte.

Large Bomolocha - *Bomolocha edictalis* (Wlk.) — s Saskatchewan n to Bjorkdale and Meadow Lake Provincial Park.

The Lomanaltes Snout-Moth - *Lomanaltes eductalis* (Wlk.) — s Saskatchewan n to Otter Rapids area.

Hop-vine Snout-Moth - *Hypena humuli* Harr. — s Saskatchewan n to Punnichy.

Green Clover-worm Moth - *Plathypena scabra* (F.) — Rockglen (CNC).

Dotted Snout - *Spargaloma sexpunctata* Grt. — Tantallon, Roche Percee and Fort Qu'Appelle.

EXPECTED SPECIES

Julia's Idia - *Idia julia*(B. & McD.) — w to Aweme, Manitoba (CNC).

Rotund Idia - *Idia rotundalis*(Wlk.) — w to Aweme, Manitoba.

Grayish Zanclognatha - *Zanclognatha pedipilalis* (Gn.) — w to Whitla, Alberta.

Large Hypenodes - *Hypenodes caducus* (Dyar) — n to Edmonton area of Alberta.

Sordid Bomolocha - *Bomolocha sordidula* (Grt.) - w to Aweme, Manitoba (CNC).

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HISTORY OF THE SASKATCHEWAN NATURAL HISTORY SOCIETY

Margaret Belcher is planning to write a history of the Saskatchewan Natural History Society which will trace its evolution from its beginnings as an informal group of individuals who wished to share their interest in nature and their concerns about conservation. HAVE YOU ANY SUGGESTIONS FOR HER OR MATERIALS TO CONTRIBUTE?

The official transactions of SNHS are recorded in the Society's minutes and correspondence, but she would like to have personal accounts from officers and members of the Society telling of their work with the organization in any of its roles. Local societies, particularly those which do not have published histories, are encouraged to send a brief outline of their society's organization and history, making special mention of the relationship of their society to the provincial organization and of their involvement in joint projects. Send a report, a letter, or a tape.

If you know of any other nature clubs or similar organizations formed in Saskatchewan before the provincial SNHS, this information would be of special interest.

If you can help, please contact:

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THE BUTTERFLY MAN

PEGGY LOOBY, Box 76, Bjorkdale, Saskatchewan. S0E 0E0

John Kozial and part of his insect collection of 2500 +

Surprising talents are often discovered at local programs and displays and it was at a hobby show in Tisdale in the fall of 1988 that I first became aware of John Kozial's interest in entomology.

At present he and his mother Susan operate an 800-acre grain farm 7 mi. northeast of Bjorkdale where he attended school and graduated in 1978. In 1980 he graduated from the School of Agriculture at the University of Saskatchewan in Saskatoon with a diploma in agriculture. Unlike many of our young people today, he returned to the family farm, determined to make a living from the land where, together, he and his mother continue to cope with the daily stress and yearly concerns of farming.

As a young child, John was often left to his own devices and most of his time was spent exploring and playing in the nearby woods and fields. It was during those early years that he first gained a respect and an appreciation for, and a love of nature that have remained with him to this day — a characteristic which is lacking in the majority of young people raised in today's sprawling, concrete, urban environments. Ever since John was a youngster, he has loved

reading and books, especially those on natural history, borrowed from local school and public libraries. In addition, relatives gave him books on science, including several on butterflies, moths and other insects. These piqued his interest even more. In his mid-teens, John visited the Natural History Museum in Regina where he saw his first mounted and organised insect collection. While there, he purchased a copy of Ronald Hooper's *Butterflies of Saskatchewan* — a book that he still uses and finds invaluable in identifying his Saskatchewan butterflies. On that day, 13 years ago, he resolved to begin collecting insects on a serious basis and his interest has never waned. So opportunity, talent and some outside influences have all played a part in nurturing John's interest in an unusual hobby.

A home declares the interests and personalities of its occupants in both obvious and subtle ways, and John and his mother both agree that their house is rapidly being taken over by equipment and products indicative of his hobbies. Large framed prints of butterflies, moths and flowers adorn the walls, volumes on entomology and photography line the bookshelves, his microscope, pens and labelling equipment are within easy reach and a faint odour of naphthalene lingers in the air. When I was there, the couch and coffee table served as a display area and I was thus able to examine his over 2500 specimens which are carefully arranged in shallow, wooden, glass-topped drawers.

John explained that one of his uncles, a cabinet-maker, built the 24 glass-topped drawers for him. They will eventually be placed into a cabinet (his uncles's future project, along with another 24 drawers and cabinet). Since his collection was growing so rapidly, a safe, dark, dust-free storage place became essential. It was at this point that I discovered the source of the naphthalene. Moth balls are used inside the cases to deter other insects such as clothes moths and carpet beetles from destroying the collection.

John began collecting in 1976. He became increasingly involved in collecting and studying insects and about 6 years ago joined the 95-member Entomological Society of Saskatchewan, a group of mainly professional entomologists employed by the Saskatoon and Regina Agriculture research stations. Belonging to a society enables him to keep in contact with other people of similar interests, with whom one can exchange specimens and information on new discoveries, rearing techniques, collecting trips, etc.

John showed me a microscope which the society had purchased for the use of its amateur members. "Nearly all of the members of the E.S.S. are professionals," he told me, "and they use microscopes every day at their work and have ready access to them ... unfortunately amateurs like myself, living 165 miles from the city, don't have such a convenience available to them. To remedy the situation the E.S.S. purchased this microscope to lend out to any member who needs it." John is on the microscope committee and says that any member may borrow the instrument simply by contacting him. The number of amateur collectors in Saskatchewan is quite low — perhaps less than a dozen throughout the province.

Most of John's specimens have been collected in Saskatchewan around his home at Bjorkdale. In the last three or four summers he has expanded his collecting area to include insects from all parts of Saskatchewan. He has collected in the Porcupine and Pasquia Hills near Hudson Bay, the Cypress Hills and Great Sand Hills of southwest Saskatchewan and in the new Grasslands

Cases of tropical butterflies in John's collection

Provincial Park near Val Marie and in the Killdeer Badlands. To capture his specimens, he uses an ordinary butterfly net, but admits, with a chuckle, that he tries to stay out of sight, doubting that a grown man chasing over the fields in such a fashion would go completely unnoticed. Three-quarters of John's collection is made up of moths (around 250 species) and these are captured in special light traps of his own construction set up in the yard at home.

Important in locating new species is first locating the insect's foodplants. "You have to ba a fairly good botanist, as well, to be an entomologist," John explained, "because often you have to find and identify the food plants in order to locate those particular insects associated with the plants. 'Rearing out' insects is one of the most interesting aspects of the hobby. In my light traps I occasionally find some female moths (most moths attracted to lights are males) but, instead of adding them to my collection I will confine them in a small container like an ice cream pail, along with the right food plant and often they will lay eggs for me. From that stage on I can rear the larvae through to the pupal stage and eventually, with a little luck, adults will emerge. Many rare moths and butterflies for collections are reared, as they are so uncommon in the wild that perfect, unrubbed specimens are seldom collected." In many different parts of the world, particularly in the tropics, there are special "butterfly farms" which breed and rear insects for commercial purposes. These farms are beneficial as they provide an income for people in poorer countries without endangering the wild populations of insects. Many of the rarest and most spectacular insects are now protected by law in these tropical countries.

The rearing of insects is one area of entomology where an amateur can make significant contributions, since almost nothing is known about the life histories of many of the more than 120,000 species of butterflies and moths in the world. With over a million described species of insects and many more yet undiscovered, there remains an enormous amount of study to be done. You will never get bored studying insects since new ones are always turning up right in your own back yard.

It is ideal to mount insect specimens as soon as possible after they have been collected, while they are still fresh and pliable. Much of the time this is not possible as several hundred specimens may be captured in a single day. The insects are first put into killing jars and are then stored in triangular paper envelopes called "papers" and are allowed to dry. Specimens can be kept in this manner for many years before being properly mounted. During the winter months, the insects can be "relaxed" in special relaxing boxes, such as airtight, plastic sandwich boxes filled with layers of damp toweling. The "papered" insects are placed between the layers of damp toweling and remain there usually about 12 hours or so, depending on their size. After that time they are again soft enough to mount or spread on special boards made for that purpose. Special insect pins, longer, thinner and more rustproof than ordinary pins, are inserted vertically through the thorax of the butterfly. It is this pin by which the specimen will always be handled. The body of the butterfly is then placed in the narrow groove of the spreading board and the wings are carefully manoeuvered into the correct position with tiny needles. Next, the wings are pinned and held in place with narrow strips of paper along the base of the wings. Waxed paper is used to cover the rest of the wings to prevent them from curling upwards as they are drying. Held fast in this flat position by countless pins around the

edges of the wings the specimen is left to dry for 3-4 weeks. No preservatives are used; the insect dries naturally. The specimens are then carefully removed from the boards. They are now very brittle and dry and are identified, labelled and arranged in their proper order in the collection. The entire process is very time consuming and requires patience and practice.

For labeling, John first used a small crow-quill pen and India ink, but now a very fine-tipped drafting pen is used along with custom-printed labels for specimens collected around Bjorkdale. Labels for those from outside this area are still printed by hand. Doing this labelling by hand is tedious work and a strain on the hands and eyes. The tiny labels, fitted to the pins below the insect, require very small printing. I truly perceived the patience needed to cope with such fine work when I noticed in the collection a number of minuscule black beetles about 0.25 inch long and the thickness of a pencil lead. For mounting, the tiny insects are glued to a "point" — a small, narrow triangle of cardboard which is then pinned to an ordinary insect pin. It is for the identification of these minute insects that a good microscope is essential.

John's collection of 81 different species of Saskatchewan butterflies represents only a little more than half of all the butterfly species found in the province. He is constantly striving to expand and complete his collection, but in light of the fact that insects are the most numerous animals on this earth it is truly an impossible task to complete. There are 750 species of butterflies found in North America. In the tiny Central American country of Costa Rica there are 2500 species and in Peru, South America, the even more incredible number of 3500. The total number of butterfly species found in the world is upwards of 20,000 with another 100,000 species of moths. The collection of insects can take up an entire lifetime with no fear of ever running out of new species to discover.

Although John understands that some people have reservations about killing butterflies and other insects for display and study, he feels that the benefits of educating the public far outweigh the loss of an insects's life. It should be pointed out that insects are the most successful organisms on this planet, owing to their adaptability and their phenomenal reproduction rate. Very few species of insects have been brought to extinction due to the efforts of collectors. A much greater threat to their survival, and indeed to the survival of all living things, man included, is rampant habitat destruction and worldwide environmental pollution.

"When I had my collection on public display last fall," John told me, "one of the most commonly asked questions was 'Where did you find all of the different insects?' When I replied to the people that 90 percent of them were found right around my home, many were amazed. As a public educational display my collection has some value. It makes people, often for the first time in their lives, stop, look, and open their eyes to some of the small wonders all around them. Maybe some of them will gain a little more respect for these often overlooked, but important and fascinating living things. Perhaps some of this respect will deepen and turn into a greater appreciation for some of the natural and irreplaceable wonders left in this world, most of which the majority of us have taken for granted for far too long."

Acknowledgements

Thanks go to John Kozial for his input in this note on his hobby, and for supplying the photographs for illustration.

A NEW SET OF BIRD GUIDES

BERNARD GOLLOP, 2202 York Avenue, Saskatoon, Saskatchewan. S7J 1J1

In 1987 a new set of guides was made available to birders:

FARRAND, JOHN, Jr. 1987. How to identify birds. An Audubon handbook. McGraw-Hill, N.Y. 317 pp., 8.75 x 4.50 in., 700+ color photos. $19.95

FARRAND, JOHN, Jr. 1987. Western birds. An Audubon handbook. McGraw-Hill, N.Y. 496 pp. 1314 color photos. 168 drawings. $19.95

FARRAND, JOHN, Jr. 1987. Eastern birds. An Audubon handbook. McGraw-Hill, N.Y. 496 pp. 1354 color photos. 179 drawings. $19.95.

I am largely commenting here on this publication's pertinence to Saskatchewan birds as listed in the 1983 checklist, plus Clark's Grebe and Red-naped Sapsucker.[4] For brevity, the three volumes will frequently be referred to as HTI for the How-to-Identify volume, WHb for the Western handbook; EHb for the eastern handbook. The number following an abbreviation is the pertinent page. Emphasis is on WHb because it is recommended for Saskatchewan.

All that glitters is not gold.

Since 1977 birders have been showered with 11 major volumes on identification — one per year![1,2,5,6,7,8] Six sets have been involved, including the present one, and three have been based on photographs and have involved John Farrand as author or editor.[1,2] None, including this one, has been as good an identification guide as the three sets based on paintings.[5,6,7] However, the present series claims a "new approach to birding" and it includes the best and most extensive set of mini-photographs ever compiled. As a group, their color and sharpness are unsurpassed. The three-volume Master Guide had 1245 photos; these handbooks probably have twice that many different photos (about 3370 in total, including duplicates). The western and eastern volumes of this set are worth getting (preferably as a gift) for the photos alone. In buying WHb and EHb, much more often than not you get twice as many different photos of a species. However, for the difficult-to-separate shrikes, the six pictures in WHb are the same as in EHb — except for color reproduction.

How-to-identify-birds Handbook

This volume is the most interesting of the three. It is the key to the author's "new approach to birding," which he does not define anywhere that I can find, other than to say of HTI, "This book tells you how my system works" (p. 17). The book has more than 700 photos of habitats and birds that are used as an illustrated dictionary of six chapters: habitat, size, behavior, shape-and-posture, color-and-pattern, and voice (the last restricted to songbirds and doves). Except for voice, each of these sections has 8 to 10 two-page charts that are the stepping stones in this "new approach to birding."

The author himself seems unsure of the method he proposes. In HTI (p. 108) he writes "... you narrow down the number of birds until you reach the

species you have seen." But later (p. 120) he states "... identifying a bird is a process of elimination that leads from the known to the unknown ..." There seems little point in trying to end up with an unknown.

Habitat

In this section habitats are defined by photos of luxurious color and unbelievable clarity. There are 152 photos, mostly of scenery, but almost a third are portraits of pertinent birds. However, considering the number of bird photos in the three volumes, all with habitat in the background, it would seem more appropriate to have included more or larger habitat shots.

The "new approach to birding" puts habitat first in the identification process. I think this is a major fallacy. A species is seen in many habitats in the course of a year but is seldom seen in more than three recognizable plumages and, with few exceptions, it varies little in size. When I see a bird I cannot identify, I try to determine its size, color and shape before anything else. I don't care what habitat it and I are in.

"I have listed all North American bird groups, as well as very striking species, according to the habitats in which they are *normally* found" (italics mine; HTI p. 21). This is not good enough. The author's idea of normal habitats matters less than where birders may normally see a species. Beginning birders are told not to look for many northern breeding species — most warblers and sparrows — Merlin, magpies, Clay-colored Sparrows, etc., in residential areas, which happens to be where I normally and regularly see these species.

Habitat contradictions also occur in the texts. In the habitat section of HTI (p. 77) Townsend's Warbler is shown as typical of residential areas but these sites are not listed for the species in WHb (p. 365). In HTI (p. 177) a mark appears under goshawk for Open Habitats but in the species treatment, these are not mentioned (WHb p. 223, EHb p. 223).

Size

A stated cornerstone of this different approach to birding is a new definition of size that combines confusion and impracticability. "When I refer to size, I mean the size of a bird's body, and not its overall length and its shape... Considering the overall length of a bird by including a long neck or tail would make it difficult to group birds by size,

Young Black-billed Magpie *Lorne Scott*

because we would be dealing with individual, subjective impressions rather than with facts" (HTI p. 78). As I interpret this statement, the author is saying that visualizing and comparing body length, i.e., without head, neck and tail, is objective, whereas looking at total length is subjective, making it difficult to compare one species' total length with another's. Good luck, novice birder! Most veteran birders look at total lengths.

We then read in WHb (p. xi) that "The Field Marks section begins with the average *body* length of the adult ..." (italics mine). Not so! The lengths given in this section are the same as those given in the National Geographic (NGS) guide as "Average length from tip of bill to tip of tail."[7] The author now apparently is using the very measurement he rejected in HTI.

Seven size categories are proposed: very small, sparrow-, robin-, pigeon-, crow- and goose-sized, and very large. Straightforward? Not until you completely revise your thinking and remember that these categories purportedly refer to headless, neckless and tailless bodies. As a result, at 12 in. (total length) we find Mourning Dove and our two cuckoos classed as "Robin-sized," while Merlin, Upland Sandpiper and nutcracker are "Pigeon-sized." At 14 in. Chukar and Greater Yellowlegs are "Pigeon-sized" but Rock Ptarmigan and stilt are "Crow-sized." Furthermore, Cackling Goose which is "only about the size of a Mallard" ("Crow-sized") is labelled "Goose-sized" (WHb p. 119).

Given a revolutionary definition, one should be able to assume that a key species is near the middle of its size range, but, if total lengths are any indication, this is not the case. Crow-sized birds go from 2.56 in. shorter to 6.5 in. longer than an average crow; pigeon-sized birds in this book are the same length as or *longer than* Rock Doves, while all goose-sized birds are the same length as or *shorter than* Snow Geese. A final problem is that assignment of a single (average) length to a species gives the illusion that it fits into only one category. However, on the basis of the range in total lengths given in the Master Guide, almost as many "Crow-sized" Short-eared Owls and Spruce Grouse, for instance, are actually in the pigeon- as in the crow-sized category.[2]

While the author suggests that mastering his seven size classes is a major step in identification, I believe he puts too much emphasis on it without sufficient warnings. Many birders have had the experience of finding that Bohemian Waxwings appear sparrow-sized one day and robin-sized another. Furthermore, the five smaller classes end up being separated from each other by a half inch or less — an impossible distinction to make in the field.

The first chart combines Habitat and Size, listing 154 groups and species of North American birds under seven size classes in the left column of each left page and 23 habitats across the top (HTI pp. 110-112). From this, one learns such things as: warblers (43 unspecified species) use 13 habitats, American Robin uses 10, and one magpie (unspecified) uses 3 habitats (whatever the other magpie is, it is not listed; HTI p. 116). Reading the charts another way, one finds that "Open Country, Grasslands, and Groves" are used by 25 groups of sparrow-sized birds, representing an unknown number of unspecified species. Not very useful for the beginning birder studying a small unidentified bird in an aspen grove. Not only is this chart of little practical value in identifying a bird but it is also largely redundant because each of the Behavior, Shape-Posture and Color-Pat-

tern charts is more specific in its identifications and incorporates the seven size classes and five major habitat groups.

Behavior and Shape and Posture

These two sections in HTI illustrate some postures not found in field guides and these are useful. However, some behaviors are not amenable to the three photographs allotted, e.g., "Flushing" (under Wings), "Erratic Flight," "Skulking," "Slow Foraging" and "Rapid Foraging." "Mobbing Predators" appears under "feeding" and a glance at the birds listed indicates that curlews, magpies, redpolls and others have been left out. "Wing-flashing" on the ground is illustrated by a mockingbird (HTI p. 134) and shown as a "Giveaway Field Mark" in the chart (HTI p. 175) but is not mentioned in the species treatment (WHb p. 425).

Three pictures are usually used to demonstrate a character, but there are indications that there may have been a shortage of photos. For "Noisily Scratching Leaves," all show Rufous-sided Towhee; "Holding Neck in an S-curve," Tricolored Heron only (on the next page is a stilt with an S-curved neck but stilt is not shown under this behavior in subsequent charts). In addition, some of the demonstration photos are irrelevant to the pertinent character: "Robbing Food From Other Birds" shows three photos of a Long-tailed Jaeger alone in flight; "Flying With Slow Wingbeats," three photos of Great Egret; "Bill-sweeping," all pictures are of an avocet, apparently not bill-sweeping. Obviously, in dealing with shape and posture, the author has restored heads, necks and legs to the birds.

Color and Pattern

This is an interesting conglomeration with no explanation of why it is restricted to ducks, woodpeckers and songbirds. Unfortunately, the selection of species to illustrate characteristics is subjective and inconsistent. For instance, Mallard and shoveler are examples of "Green Head" while the green-headed Red-breasted and Common mergansers are "Black-and-White Pattern." "Yellow Breast" shows Canada and Kentucky warblers; why is the former not under "Yellow [with] Black on Breast" and the latter "Yellow [with] Dark Mask?" Blue Jay is listed as "Solid Blue Overall." Shrike exemplifies "Black-patterned — Black-and-White Markings" while 12 pages later the nutcracker illustrates "Gray — Gray and White."

Clark's Nutcracker *Juhachi Asai*

Loggerhead Shrike *Gary W. Seib*

The Process

As I understand the "new approach," if you debark from a plane in the boreal forest and see a "Sparrow-sized" bird, you turn to the Habitat and Size chart in HTI and find that there are 131 species of this size found in this habitat. You then turn to the next chart — Behavior. (A long aside: Why is Behavior before shape and color? "... because a bird's behavior can sometimes be seen at distances so great that you can't make outs its color or shape." The example to prove the point is: "... one can distinguish the Greater Yellowlegs and Lesser Yellowlegs ... from the window of a speeding train. The Lesser Yellowlegs always probes for its food or picks it from the surface, but the Greater often feeds by sweeping its bill back and forth through the water. This distinctive behavior can be seen from so far away that it can be used to spot a Greater Yellowlegs even when shape and color are all but invisible" (HTI p. 122). On HTI pp. 161 and 163 bill-sweeping (side-to-side) is shown as a "Giveaway Field Mark" for both Greater Yellowlegs and avocet. One wonders how many faraway avocets the author has recorded as Greater Yellowlegs. This example is a better justification for downplaying behavior than for rating it so highly. End of aside.)

Returning to what is actually a Behavior/Habitat/Size chart, the birder finds four pairs of facing pages for "Sparrow-sized" birds, with 13 to 29 behaviors on left pages and about 23 species and groups across the tops of each pair of pages. These s/he works through, hoping the bird performs one of the behaviors listed.

This time-consuming search is then repeated through similar charts on "Shape and Posture" and "Color and Pattern," and descriptions of 12 voice types. While only a caged canary would sit still for all this, the birder can theoretically take 60% of Saskatchewan birds to the species level. This does not strike me as an "easy-to-learn method for quick and accurate identification of birds."

The value of HTI would have been considerably enhanced if, after going through the clues and coming up with a species or group name, the birder could read beside that name the pages treating the bird(s) in a regional volume. Space exists to do this, using boldface and plain type to separate WHb and EHb. The author's solution is to provide an impractical index, alphabetical by 62 artificial groups (not bird families). One such group is "Meadowlarks Brown, open country birds with long pointed bills. Walk on ground and flush when disturbed" (HTI p. 295). Could this not equally fit Marbled Godwit and Upland Sandpiper? (Incidentally, in the color charts, meadowlarks appear under "Yellow.") This index is needlessly frustrating. For instance, crossbill is not under C and one has to know enough taxonomy to realize that crossbill will be found under "Finches" (HTI 300). Another problem is the lack of indentation and inconsistent use of dividing lines; as a result, one has the impression that Redhead is a merganser (HTI 299). The beginning birder has to know that chat is a warbler in order to find it. However, waterthrushes are not under warblers.

The how-to handbook has an appendix of birdfinding guides that fails to include any Canadian publications, including *A Bird-finding Guide to Canada*.[3]

Had the producers of this volume wanted to be truly innovative, they would have expanded and computerized the charts. The birder could then enter the characteristics detected — in the field or at home — and the com-

puter would calculate what species s/he was seeing.

This volume presents an interesting approach, but its information varies from being seriously flawed to needing considerable refinement. In the meantime, the beginning birder might better spend a lot of time studying pictures and text in a good field guide and going out with people who know birds — always being at least a little skeptical.

Western and Eastern Handbooks

The introductory pages are the same in both guides except for geographical accommodations. Pages 20 through 477 provide "picture-and-text accounts of over 460 species" in each guide. Each species fills a page, allowing only two species at a time to be compared simultaneously. The upper fifth contains species name, size category, one to five habitats used, a size bar and an inset color photo or black-and-white drawing of a key character. The middle third of the page has one to four color photos and the bottom third is text under the heading Field Marks (incl. length, plumage, voice), Similar Species and Range.

The claim for WHb is that coverage includes "birds regularly found" in "the states between the Pacific Coast and the western Great Plains ... as well as Saskatchewan," but excluding "the arctic northern parts of ... Alberta and Saskatchewan." Really! The eastern handbook "does not cover the birds of ... Saskatchewan." In fact, EHb has 17 more Saskatchewan species illustrated than WHb.

How complete is the coverage for this province? Four hypothetical species, as expected, are not even mentioned in either volume: Common Pochard, Eskimo Curlew, Sharp-tailed Sandpiper and McKay's Bunting. All are illustrated in the National Geographic Society (NGS) guide. Another 39 species are not mentioned in WHb and 34 in EHb. A further 24 species are mentioned but not illustrated in WHb and 12 in EHb. Thus 67 species (18%) on the Saskatchewan checklist are not illustrated in WHb, and 50 (13%) in EHb. Among the "regularly occurring" species not mentioned in WHb are Piping Plover, Brown Thrasher, 12 confirmed species of warblers, Le Conte's, Sharp-tailed and Harris' sparrows. Species and iden-

Herring Gull *Robert J. Long*

California Gull *Robert J. Long*

tifiable Saskatchewan subspecies mentioned in WHb but not illustrated include Clark's Grebe, Yellow-shafted Flicker, Blue Jay, Sprague's Pipit, three breeding species of warblers, Rose-breasted Grosbeak, Baltimore Oriole and Slate-colored Junco. It might be argued that some of these species are excluded because they breed in "arctic" Saskatchewan, but all either breed or migrate regularly through the tropical parts of the province.

Plumage descriptions

With one page per species, you might expect thorough descriptions of species and similar-species comparisons. Identification data in the text are nothing special. Furthermore, they are relatively verbose compared to the NGS guide. In spite of that, NGS devotes more words than WHb to such difficult groups as Red-tailed/Swainson's hawks, California /Ring-billed/Herring gulls, Artic/Common /Forster's terns and Least/Willow/Alder flycatchers.Among omissions is mention of the white tufts on both sides of the lower back of Olive-sided Flycatcher. The "cheek" — a key plumage character in separating meadowlarks — is not labelled in the diagram showing parts of a bird.

Ranges

The set is behind the times in using words, instead of maps, for distribution. The ranges are skimpy and they are ambiguous about occurrence in the Prairie Provinces, e.g., Whooping Crane "nests in west-central Canada." In some cases they are wrong, e.g. in WHb and EHb Double-crested Cormorants do not breed in this region but Arctic Terns breed throughout it. According to WHb, Franklin's Gull and Black-billed Cuckoo do not breed in Alberta nor do Red-naped Sapsucker, MacGillivray's Warbler or Brewer's Sparrow nest in Saskatchewan. Due to omission of a phrase found in EHb, WHb states that Burrowing Owls do not breed in the Canadian Prairies.

Illustrations

In still another way, these titles fall below the standard set by two previous guides sponsored by the National Audubon Society. In Peterson's and Master guides, pointers on the illustrations highlight distinctive field marks. No such useful aid to identification occurs in this set.

In a good field guide, most species are shown from the side with details of at least half of a bird's front clearly shown. In this, as in other photographic guides to date, particularly with songbirds, too many photos show more back than front and, when the angle is right, the front is too often shaded. There are also other examples of problems with photos, e.g. the color of Connecticut Warbler in EHb and the blurred Blue Grosbeak in WHb and EHb.

How many different illustrations are there for each species? In WHb: 17 Saskatchewan species have one illustration, 89 have two, 128 have three, 71 have four and 3 have 5. However, as in all the major photographic guides to date, when a photo is not available, a key plumage is not illustrated and, in this one, photos are repeated, sometimes reversed or enlarged, giving the impression of new pictures. In both WHb and Ehb, "Adult Male" and "Male" ducks apparently occur only in breeding plumages; there is no mention of their female-type eclipse feathering. For many species illustrated by three photos (excluding the inset), one picture is double-sized and is a completely unnecessary portrait, usually a bust, of one of the plumages already illustrated. Sometimes it is simply an enlargement of one of the adjacent photos. The space would have been much better used by presenting the other two photos in larger format or by showing another

plumage. In many cases the inset photo is also an enlargement of the head from one of the other photos. In the case of the two redpolls in WHb, the same inset is used for each species!

But the heart of a field guide is the number of plumages that are well illustrated. For some difficult-to-separate species, this number in WHb is significantly smaller than in NGS, the ratios for those species (WHb/NGS) standing as follows: Red-tailed and Swainson's hawks 3/9; jaegers 4/13; California, Ring-billed and Herring gulls 7/16 and two shrikes 3/5. Because not all species for the following comparisons are in WHb, the numbers are from EHb: Semipalmated, Least, Western, Baird's and White-rumped sandpipers 10/14; Arctic, Common and Forster's terns 3/14; Veery, Wood, Hermit, Swainson's and Gray-cheeked thrushes 5/10. Finally, both volumes are required for a Mourning-MacGillivray's-Connecticut warbler comparison because not all occur in either volume: 5/10. Furthermore, breeding adult male plumages dominate (but are not shown for the three phalaropes). As a result, WHb and EHb are more suited for identification in spring and summer than fall and winter.

Photographic guides are noteworthy for their disregard of scale and this may mislead some users. Two examples on facing pages in WHb give the impression that avocet is smaller than stilt (pp. 140-141) and nutcracker is larger than magpie (pp. 290-291).

Sequence of species

"To help you refer to a species quickly, the picture-and-text accounts are organized according to similarities such as habitat, lookalikes, and related species" (WHb p. x). In fact, species are broadly divided into water-oriented and land birds but groups and species within these divisions are haphazard and unpredictable. The WHb begins with gulls, terns and later puts Pied-billed Grebe among the ducks; EHb begins with terns, gulls and puts Pied-billed in with other grebes. A glance at the Contents shows that the criteria for organization apparently changed from WHb to EHb after kingfishers, e.g. pipits-longspurs, larks, meadowlarks and orioles in the former and hummingbirds, chickadees, flycatchers and woodpecker in the latter.

Furthermore, pipits-longspurs are more than 180 pages from other sparrow-sized open-country-grassland little brown birds. For raptors in WHb, part

Harris Sparrow *Sheina Wait*

Lapland Longspur *Sheina Wait*

of the sequence is: buteo, falcon, two kites, two accipiters, buteo, accipiter, buteo, falcon, buteo, falcon, two buteos and two falcons. Neither habitat nor size nor look-alikes explain the sequence. In EHb, the order is different. In EHb Dickcissel is between McCown's and Lapland longspurs; in WHb it is 195 pages from the nearest longspur. In WHb Golden- and Ruby-crowned kinglets are on the same page; in EHb they are 45 pages apart. Why is the sequence ducks-swans-geese in the body of WHb, ducks-geese-swans in EHb, and swans-geese-ducks in unnumbered pages 1-4 of both volumes? Etc., etc., etc.

Behavior hardly seems adequate justification for separating species that look alike, are the same size and are assigned to the same habitat. For instance, I doubt that any birder is helped by inserting Black-and-white Warbler between woodpeckers and nuthatches and 143 pages from its look-alike, the Blackpoll in EHb. In WHb the Black-and-white is described, but not illustrated, under Blackpoll.

The author claims that a knowledge of taxonomy is not needed for his system. Not so, as noted previously for crossbills and bird groups. Furthermore, taxonomy and look-alikes are often closely associated and most beginning birders have probably been exposed to enough taxonomy through checklists and regional bird books to use it profitably in a field guide. Within the basic division of water and land birds, a taxonomic sequence would have been more logical (with some exceptions) than the organization found in these regional volumes. Everyone from beginning to expert birder would then have had a good chance to find a species or group by going directly to the text.

Identification Errors

The major misidentification that I noted in WHb [2] is a female-plumaged pintail in flight labelled as a female Mallard. Immature kittiwake and non-breeding white pelican are referred to as breeding adults. The treatment of Common Grackle implies that males and females look identical. While not exactly an error, in at least five cases in WHb, one species' name at the top of a page covers two species, e.g. "Acorn Woodpecker" illustrates Red-headed as well.

Numbering

There are also some annoying features in the numbering of various features. Where there is more than one photo, they are numbered. But in about 87 of 281 such cases, the photos are not treated in the text in the same order as numbered, requiring constant attention to the sequence. The absolute need to have facing pages mirror each other and to maintain a rigid numbering system are apparently the causes. Page numbers: what could be more straightforward? Yet, in both WHb and EHb, only even Roman-numeral pages are designated; 13 pages between xvi and 14 are unnumbered — *except in the index*, and only one page between 480 and 496 is numbered. Furthermore, page numbers in WHb and EHb appear at the bottom of each page, while in HTI they are at the top and then *only* on odd-numbered pages — a particularly frustrating feature since the index refers to the two-page charts *only* by even-numbered pages.

Trees could have been saved. With no concern for the conservation of trees or the birder's purse or convenience in the field, the author, publisher and sponsoring agency have produced a set that requires both WHb and EHb for many areas of the continent and for many travelling birders (combined weight 1100 g; 2.2 lbs.). *In fact, the two*

handbooks could have gone into one volume.

As it is, the same 378 species are treated in each regional book; an additional 156 appear in WHb only and 124 in EHb only. *More than half of the species are duplicated!* Take the western handbook and add the 104 pages it takes to cover the 124 species not included and the new volume would treat North America in about 620 pages. This would be 60% of the current 1026 pages — a significant saving in trees, cost and weight. (The earlier western Audubon photographic guide ran to 855 pages.[8])

Photographic guides will continue to be inadequate for bird identification until they put four or more similar-looking species on a page with several plumages for each and pertinent text on the facing page. The western and eastern handbooks combined deal with about 658 species, not all illustrated; the NGS guide depicts all of these and 150 more in one volume.[7] The cost of the former two is $40, the latter $27 — less when you can get it on sale — and you get more pictures per species.

Editing

In most publications, editing errors are inconsequential, but not in this set. Unbelievably, three birds in WHb are given page numbers in the index but do not occur in the text: Bewick's and Mute swans and Sedge Wren; in EHb Chukar suffers the same fate. On HTI p. 177, Northern Grosbeak (a nonexistent species) apparently refers to Northern Goshawk. The index in EHb is alphabetical and apparently accurate. In WHb it is not; two examples are: Golden-Plover preceding Goldeneye and Black-throated Gray above Black-and-white Warbler. In most cases hyphenated names are cross-referenced but neither Storm-Petrel nor Wood-Pewee appear under P in WHb. In WHb the pages for Great Blue Heron and Great Egret have been transposed and two page references are given for "Black-Hawk, Common" but only one for "Hawk, Common Black-."

Conclusion

All that glitters is not gold. Or, pretty pictures, a reputable sponsor and superlative advertising do not an effective bird guide make. This series should be bought only as a supplement to one or two real identification guides.

Acknowledgements

My thanks to Mary Gilliland, Jim Wedgwood, Ed Driver and Phil Taylor for their assistance in preparing this article.

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[5] PETERSON, R.T. 1980. A field guide to the birds east of the Rockies. Houghton Mifflin, Boston. 384 pp.

[6] ROBBINS, C.S., BERTEL BRUUN and H.S ZIM 1983. A guide to field identification. Birds of North America. Golden Press, N.Y. 360 pp.

[7] SCOTT, S.L. 1987. Field guide to the birds of North America. National Geog. Soc., Wash. 464 pp.

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BIRD OBSERVATIONS AT MONTREAL LAKE

RON JENSEN, 1027 King Crescent, Saskatoon, Saskatchewan, S7K 0N9 and CARMAN DODGE, 219 MacArthur Drive, Prince Albert, Saskatchewan. S6V 5X3

The south end of Montreal Lake is 95 km north of Prince Albert, Saskatchewan. The lake stretches northward for 50 km from that point, ranging from 5 to 15 km in width. Between 11 May and 25 July 1987 the authors worked independently on the lake. We saw a combined total of 116 species, of which 28 of interest are documented here.

RED-NECKED GREBE Found nesting on the lake 18 June.

WESTERN GREBE A colony nested between Ferguson Island and the east shore of Montreal Lake and near the cormorant colony at the north end of the lake.

AMERICAN WHITE PELICAN Always present, fishing on the lake. Local residents reported nesting but no nests were found.

DOUBLE-CRESTED CORMORANT A colony of 50 nests was found on a rocky island south of O'Connor Bay (northeast corner of Montreal Lake). Eggs had hatched by 26 June.

GREAT BLUE HERON A nesting colony was found on Johnston Island; we counted 20 nests.

CANADA GOOSE A flock of 19 large birds was seen daily throughout the month of June.

WHITE-WINGED SCOTER Six birds were seen on 10 June at the north end of Ferguson Island.

OSPREY A single bird was seen occasionally, flying along the east shore of Montreal Lake.

BALD EAGLE Four active nests were found along the lakeshore.

NORTHERN HARRIER One was seen hunting over a marsh on Ferguson Island on 27 June.

AMERICAN KESTREL Many birds were seen perched on the power line along Highway #2. The first was seen 24 June.

Great Blue Heron *Andrius Valadka*

MERLIN One was seen along Highway #2 on 24 July.

SANDHILL CRANE A lone bird flew over Weyakwin townsite 30 May. Additional birds were seen in the Thunder Hills (south of Weyakwin Lake and west of Montreal Lake) throughout the summer. Rosemary Nemeth indicated that cranes were commonly flushed from the pulp haul road ditches.

CASPIAN TERN A lone bird flew near Ferguson Island 9 June.

NORTHERN HAWK-OWL Two adults exchanging food were seen on 22 June. One young owl was found on 28 June. This family group was found in a swampy area between Weyakwin townsite and Montreal Lake.

GREAT GRAY OWLs were reported twice by Dodge on 11 and 21 May, on the latter date near Two Forks River north of Montreal Lake.

THREE-TOED WOODPECKER One was seen 20 May about 20 km north of

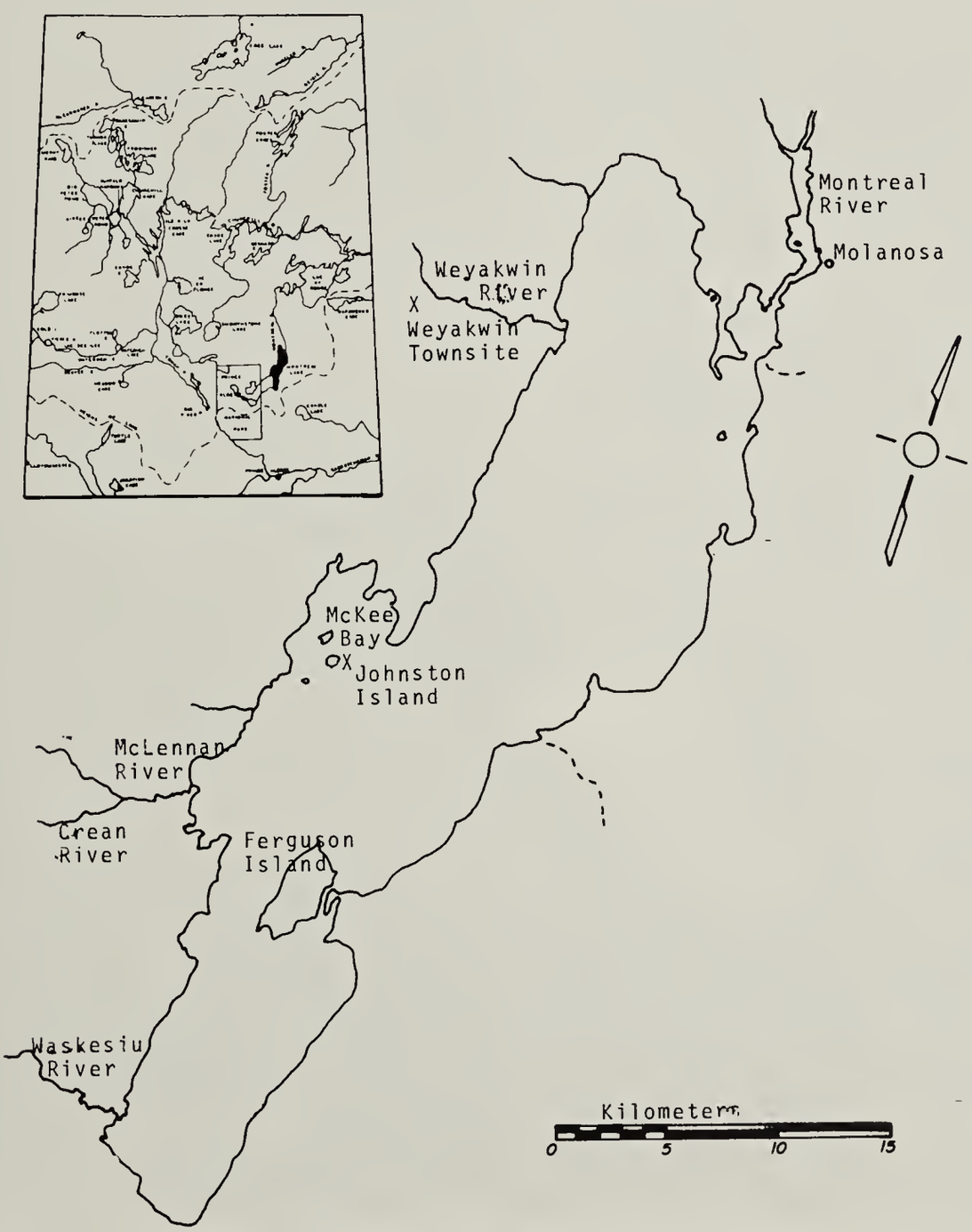


Figure 1. Location and place names on Montreal Lake

the north end of Montreal Lake by Dodge.

BLACK-BACKED WOODPECKER One reported 11 May by Dodge.

PILEATED WOODPECKER One was seen 10 June.

WESTERN WOOD-PEWEE A single bird was near the western shore of Montreal Lake on 8 June.

YELLOW-BELLIED FLYCATCHER One bird was found on an island south of O'Connor Bay 18 June.

CLIFF SWALLOW These swallows nested on the gable ends of some of the homes in the Weyakwin townsite.

BLACK-BILLED MAGPIE Only one bird; seen 26 May near the old campground on the west shore of Montreal Lake.

BROWN CREEPER This species was reported by Dodge 12 May, 20 km east of Weyakwin Lake.

MOUNTAIN BLUEBIRD A pair was located 20 km north of the north end of Montreal Lake 20 May (Dodge).

WINTER WREN A bird was heard at Weyakwin Lake 8 July.

BLACKBURNIAN WARBLER A male was seen 18 June near the Molanosa Campground at the northeast corner of Montreal Lake.

WESTERN MEADOWLARK One was reported 20 May by Dodge 20 km north of Weyakwin townsite in a dried swamp. This is at the northern edge of its Saskatchewan breeding range.

BROWN-HEADED COWBIRD A few were found on Ferguson Island.

HOUSE SPARROW This species is noteworthy only for its absence.

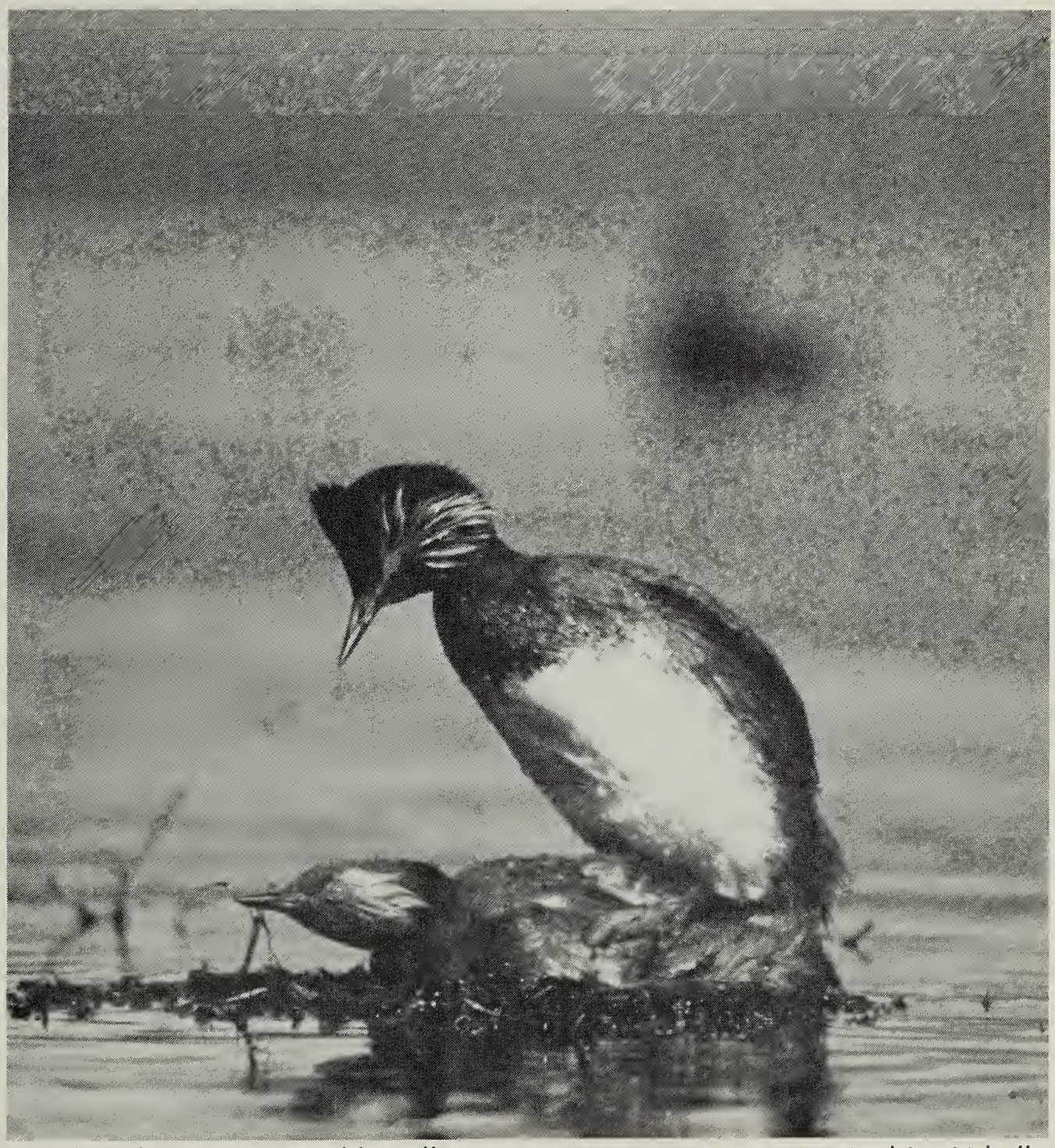
The other 88 species recorded in the area were as follows:

Common Loon, American Bittern, Tundra Swan, Greater White-fronted Goose, Snow Goose, Green-winged Teal, Mallard, Northern Pintail, Blue-winged Teal, Gadwall, American Wigeon, Canvasback, Lesser Scaup, Common Goldeneye, Bufflehead, Common Merganser, Ruddy Duck, Red-tailed Hawk, Spruce Grouse, Ruffed Grouse, American Coot, Killdeer, Greater Yellowlegs, Lesser Yellowlegs, Solitary Sandpiper, Spotted Sandpiper, Sanderling, Least Sandpiper, Baird's Sandpiper, Pectoral Sandpiper, Common Snipe, Franklin's Gull, Bonaparte's Gull, Ring-billed Gull, California Gull, Herring Gull, Common Tern, Forster's Tern, Black Tern, Common Nighthawk, Belted Kingfisher, Yellow-bellied Sapsucker, Hairy Woodpecker, Northern Flicker, Olive-sided Flycatcher, Alder Flycatcher, Least Flycatcher, Eastern Kingbird, Horned Lark, Tree Swallow, Barn Swallow, Gray Jay, Blue Jay, American Crow, Common Raven, Black-capped Chickadee, Boreal Chickadee, Red-breasted Nuthatch, Sedge Wren, Ruby-crowned Kinglet, Veery, Swainson's Thrush, American Robin, Cedar Waxwing, Red-eyed Vireo, Tennessee Warbler, Yellow Warbler, Yellow-rumped Warbler, Palm Warbler, Black-and-White Warbler, Ovenbird, Northern Waterthrush, Connecticut Warbler, Common Yellowthroat, Wilson's Warbler, Rose-breasted Grosbeak, Chipping Sparrow, Clay-colored Sparrow, Song Sparrow, Lincoln's Sparrow, Swamp Sparrow, White-throated Sparrow, Lapland Longspur, Red-winged Blackbird, Yellow-headed Blackbird, Common Grackle, Common Redpoll, Pine Siskin.

EARED GREBE, HORNED GREBE AND AMERICAN COOT INTERACTIONS

ANDRIUS VALADKA, 928 Bracewood Rise, Calgary, Alberta. T2W 3C9

On 26 May 1988 I searched a large pothole lake (about 20 ha) for photographic subjects. There were six pairs of Red-necked Grebes, six pairs of Eared Grebes and a group of five Pied-billed Grebes. While this lake had sup-



Eared Grebes mating, Priddis, Alberta *Andrius Valadka*

ported up to seven pairs of Red-necked Grebes in past years, I had never seen any other species of grebe there before. I attributed my good fortune to the fact that many sloughs and smaller lakes were drying up due to the extreme drought affecting the prairies.

Four days later I returned to find five pairs of Eared Grebes and a solitary Horned Grebe on a small cattail-bordered inlet of the lake. The following day two of the Eared Grebes were constructing a mating platform while the other four pairs milled about, apparently already paired up. The Horned Grebe was not seen.

On 1 June I set up a blind about 8 m from the mating platform and observed a single Eared Grebe pair mating on it. About 30 m from the platform a pair of American Coots was also mating at the shoreline.

On 2 June I spent 3.5 hours observing Eared Grebe solicitations, copulations and a penguin-like dance behaviour. The platform was also used by another pair of Eared Grebes after the first pair left to preen and loaf. A second platform was being constructed while I was there, about 20 m from the first. Towards the end of the evening a single Horned Grebe came to within 1-2 m of the second platform. Then a third pair of Eared Grebes began to attempt mating on this new platform. Most attempts were unsuccessful because the platform sank beneath the weight of the birds. Failed matings led to further nest-building activities.

The next evening I found a second Horned Grebe in the inlet. The pair seemed to have monopolized both mating platforms. While they were mating on one, Eared Grebes moved in towards the other, occasionally having enough time to solicit and mate (about 3 to 4 minutes) before being driven off. The Horned Grebes did not break away from their own mating but chased away Eared Grebes while they were either undergoing post-coital preening or merely swimming about. Occasionally the Horned Grebes swam out toward deeper water and both mating platforms were used by the Eareds.

At one point while the female Horned was soliciting on the first platform and her mate preened adjacent to it, an American Coot swam towards them. The Horned Grebes abandoned the platform before the coot arrived. The coot preened on the platform for nearly 2 minutes, stamped about its surface and left. The Eared Grebes mated on that platform once more before I left, and the Horned Grebe pair preened by the other platform but did not mate again. While there have been many observations of coots interacting in an aggressive fashion with both Eared and Horned grebes, this is, I believe, the only known observation of both grebe species using the same mating platform (K. Cheng, pers. comm.).[1]

Following 3 days of heavy rain I returned to check on the state of the platforms on 8 June. One pair of Eared Grebes was observed mating in the rain and one pair was observed preening on the water. There was no sign of the Horned Grebes and the Eared Grebes disappeared the next day.

[1] LYNCH, W. 1977. Coots disturb Eared Grebe nests. *Blue Jay* 35(3):173.

ANOTHER PIPING PLOVER NESTING RECORD FOR JACKFISH LAKE, SASKATCHEWAN

SPENCER G. SEALY, Department of Zoology, University of Manitoba, Winnipeg, Manitoba. R3T 2N2

The Piping Plover is classified presently as endangered in Canada, and in the United States it is classified as threatened throughout its range, except in the Great Lakes region where it is endangered.[1 3] In 1984 the number of pairs of Piping Plovers estimated to be nesting in Saskatchewan was 1000 to 1250 (2000-2500 individuals), making this the largest population of Piping Plovers in any province or state within its present breeding range.[4 2]

Renaud listed 19 and 37 localities in Saskatchewan where nesting by Piping Plovers had been confirmed, up to 1973 and 1978, respectively.[5 6] One of the localities that he listed was Jackfish Lake, 25 mi. (40 km) north of North Battleford. The actual nesting site was a

Piping Plover nest *G.J. Smith*

small island, unofficially named "Common Tern Island," situated in a bay at the southeastern corner of this lake, 1 km west of Highway #4 and about 5 km south of Cochin. Renaud reported one nesting record of the Piping Plover on this island, C.S. Houston's observation of a nest containing four eggs on 13 July 1963.[5,6]

Another nesting record exists for the same island in 1962, one year prior to Houston's observation. On 4 July 1962 I visited Common Tern Island and banded 36 Common Terns. There was also a pair of Piping Plovers with at least two newly-hatched, but mobile young.

I have returned to this island only once since 1962, on 8 June 1968. Seventeen nests of the Ring-billed Gull and three Mallard nests were found but neither Piping Plovers nor Common Terns were present.

Acknowledgements

I thank Susan M. Haig for reading a draft of the manuscript and for providing up-to-date references on the status of the Piping Plover in North America.

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Adult Piping Plover *G. Holroyd*

MEW GULLS IN NORTHWESTERN MANITOBA

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The Mew Gull, a bird rarely reported in Manitoba, is a consistent spring visitor to the Lynn Lake area of northwestern Manitoba. I have observed this small gull each year since 1983 during and shortly after spring breakup around Lynn Lake. Figure 1 shows the location of these sightings as well as two other sightings by the author at Vandekerckhove Lake and Snyder Lake. The suspected general breeding range of the Mew Gull in northeastern Saskatchewan and northwestern Manitoba is also shown.[2]

The Mew Gull breeds in southern Yukon, northwestern and coastal British Columbia, MacKenzie region of the Northwest Territories, northern Saskatchewan as far east as southern Reindeer Lake and very locally in the Churchill area of northern Manitoba.[2]

On 29 June 1974 Calvin Cuthbert observed a single Mew Gull on an island in the Manitoba portion of Reindeer Lake.[1] Herbert W.R. Copland has informed me that, other than the Reindeer Lake sighting and my records, he knows of no additional reports of Mew Gull in northwestern Manitoba (pers. comm.). The species has, however, been reported in several locations in northeastern Saskatchewan as well as at Churchill in northeastern Manitoba.[5 3] The field checklist of Manitoba birds lists Mew Gull as occasional in coastal tundra areas and accidental in other habitats in Manitoba.[4] Although there are no breeding records for this species in northwestern Manitoba, it is reasonable to assume that the breeding range does extend into this region in the vicinity of Reindeer Lake, since it does breed on the Saskatchewan side of the lake.

Mew Gulls on East Lynn Lake, Manitoba, 9 May 1988 *Philip Wright*

For the past 6 years the Mew Gull has arrived at Lynn Lake just as winter ice is retreating. It has been identified by its small size (slightly smaller than Ring-billed Gull with which it associates and considerably smaller than Herring Gull), its unmarked, greenish-yellow bill and legs of the same colour and its high-pitched, mew-like call. The species is also somewhat tamer than Ring-billed and Herring gulls. Small groups of 4 to 12 individuals have been

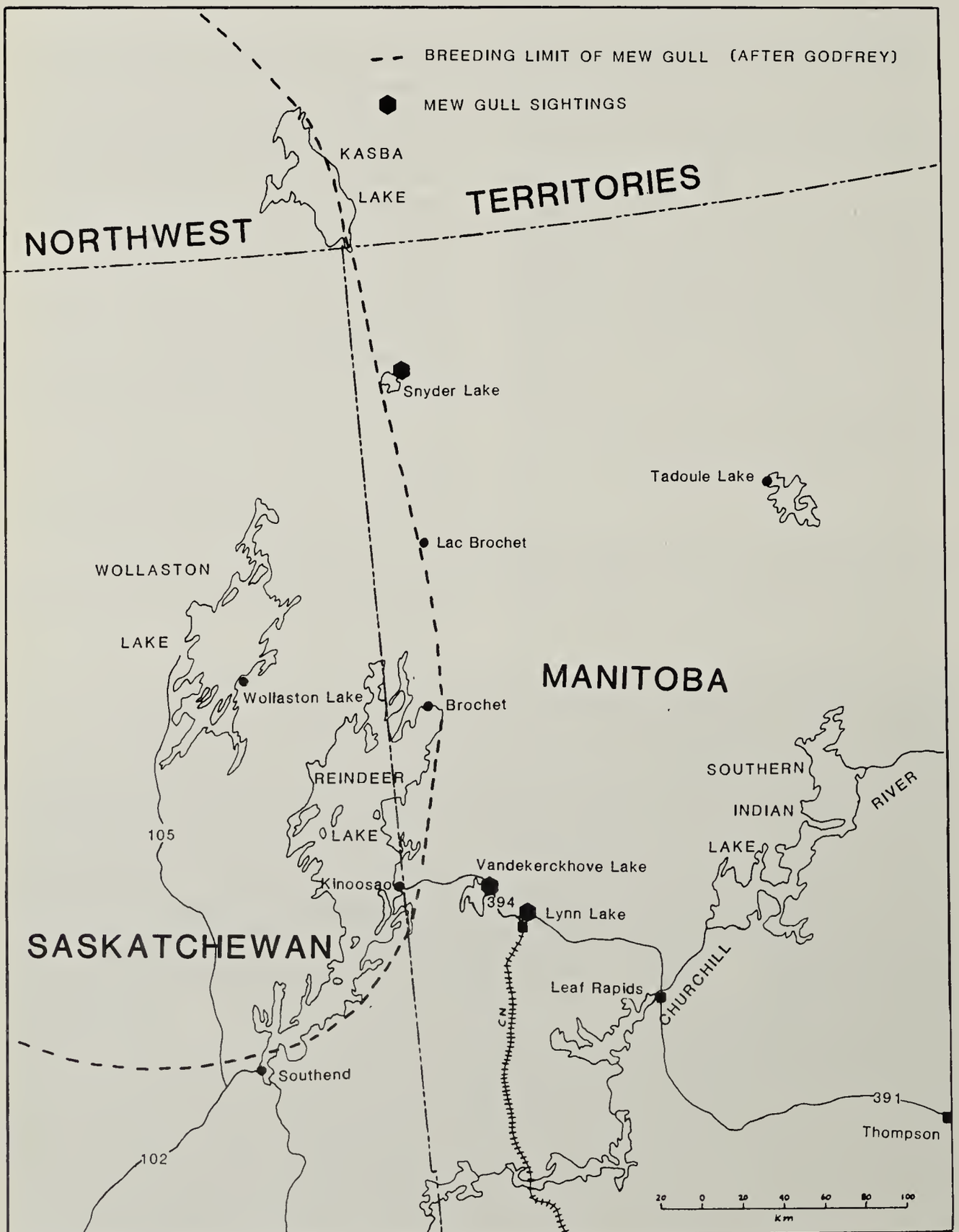

Figure 1. Mew Gull sightings in northwestern Manitoba

observed for periods of 1-2 weeks in the Lynn Lake area in spring. First sightings range form 20 April (1984) to 21 May (1983).

In 1988 the first Mew Gulls (five) arrived at East Lynn Lake and the Lynn River on 9 May just as open leads in the ice were forming. Up to six individuals were observed over the next 10 days until most of the ice had left. On 16 May 1988 Ian Ripley (local Conservation Officer with the Manitoba Department of Natural Resources) and I sighted five Mew Gulls circling and occasionally alighting on the sewage treatment lagoon at Lynn Lake. The last sighting of the species was on 19 May. By this time most of the ice had gone from local lakes.

Where the Mew Gulls go after leaving Lynn Lake is unknown; they have never been observed in the area during fall migration. However, on 23 May 1987, several Mew Gulls were seen by the author at Vandekerckhove Lake when the suckers were spawning. I also saw a single individual at Snyder Lake on 10 August 1977; this suggests that the species may summer in this area (Fig. 1).

Acknowledgements

I would like to thank Herbert W.R. Copland of the Manitoba Museum of Man and Nature for encouraging me to write this article and Robert W. Nero, Manitoba Wildlife Branch, for reviewing the manuscript and making helpful suggestions.

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Mew Gull *G.L. Holroyd*

ARCTIC TERNS AND LAUGHING GULLS IN THE QU'APPELLE VALLEY

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DAVID CHASKAVICH, P.O. Box 564, Broadview, Saskatchewan, S0G 0K0, and
JOHN NELSON, 26 Lawson Street, Regina, Saskatchewan. S4R 3P7

The late Manley Callin and his twin brother, Elmer, for years annually brought together boyhood chums to explore their old haunts for birds. Since Elmer moved to Revelstoke, B.C., some years ago, he could join only occasionally. Exigencies of employment once in a while forced Don Weidl, or John Nelson, or David Chaskavich to miss a tour or so. A number of years ago Frank Brazier was invited to participate.

When Manley passed away on 6 November 1985 the survivors determined to continue the tradition in his memory. (Ill health finally forced Elmer's withdrawal.) The Third Annual Manley Callin Memorial Birding Foray was held 24 and 25 May 1988, with the southern (Ekapo) loop covered on the first day and the northern (Qu'Appelle Valley) loop on the second. At the last minute Don Weidl had to leave so only the three authors went on the Foray.

On the south side of Round Lake a flock of 33 Lark Buntings was the first notable find, on 25 May; hitherto every species counted had been expected. The most Lark Buntings Manley had recorded was eight.[1]

About 4:00 pm on 25 May the Foray reached Maple Grove, a resort on the north side of Round Lake. Low water levels left a long strip of cattails isolated about 30 m from the shore. The western end of the strip harboured a large collection of birds, settled and hovering, including Black-bellied Plovers, Ring-billed and Franklin's gulls. After a passing boat put many of the birds into the air for a brief period, David asked:"What are the field marks of the Laughing Gull?" When told that the most noticeable marks are the wing-tips which are not patterned in black and white but are dark, he said "There is a Laughing Gull there!"

As birds in the air settled down, we moved along shore opposite to the mudbank they were sitting upon. Through a telescope we could see that there were Common Terns and two other terns which resembled Common Terns but which David declared had clear red bills in contrast to the black-tipped bills of the Common Terns. "Those must be Arctic Terns," he decided. The field guides at hand showed no other crestless North American tern with a wholly red bill in the breeding season.

Arctic Terns in the Valley near Fort Qu'Appelle had been reported earlier in May by Ronald Hooper. Using a telescope, he had studied two or three birds which had wholly red bills; Hooper believed they were Arctic Terns.

Using the scope we found that there were 13 species crammed onto this small mudbank. Because of the crowded conditions and the constant movement it could not be seen if the red-billed terns had shorter legs than

the Common Terns, nor could they be picked out in the air, so we saw only the one field mark, i.e. the wholly red bills.

We also studied two birds in the air which resembled Franklin's Gulls, but which had no black and white wing-tip pattern. The wing-tips were very dark; the trailing edges of the wings were white and much more noticeable than those of the Franklin's Gulls. This feature is mentioned by R.T. Peterson for the Laughing Gull, which we believed these birds were.[3]

This gull is on the hypothetical list of Saskatchewan birds by virtue of a sighting of two adults in flight 9 July 1975 near Chaplin, by D.B.O. and C.E. Saville who had good views of the birds with Franklin's Gulls, noting their larger size and the gray mantle shading into dark wing-tips.[4]

Proceeding westward the Foray added a notable Northern Goshawk, the latest spring date ever recorded for the part of the Valley covered by Manley's book.[1]

To support Ron Hooper's sightings of Arctic Terns, and to add a new species (Laughing Gull) to the Qu'Appelle Valley checklist of birds from one small patch of mud within a few minutes is indeed a marvel.[1,2]

Manley would have approved!

[1] CALLIN, E. MANLEY 1980. Birds of the Qu'Appelle 1857-1979. S.N.H.S. Spec. Publ. No. 13., Regina.

[2] HOUSTON, C.S. and M.I. HOUSTON 1986. Additions to Callin's Birds of the Qu'-Appelle. Supplement to *Blue Jay* 44(2).

[3] PETERSON, R.T. 1980. A field guide to the birds east of the Rockies, Fourth edition. Boston: Houghton Mifflin Co.

[4] SAVILLE, D.B.O. and C.E. SAVILLE 1975. *The Can. Field-Nat.* 90:187.

Arctic Tern *Wayne Lynch*

RELOCATING A BURROWING OWL NEST TO A NEST BOX

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The Burrowing Owl is found throughout the prairies of Saskatchewan. When nesting, it occupies the abandoned holes of Richardson's Ground Squirrels and Badgers. The decline and current threatened status of the Burrowing Owl is attributed, in part, to the loss of prairie and pasture habitat

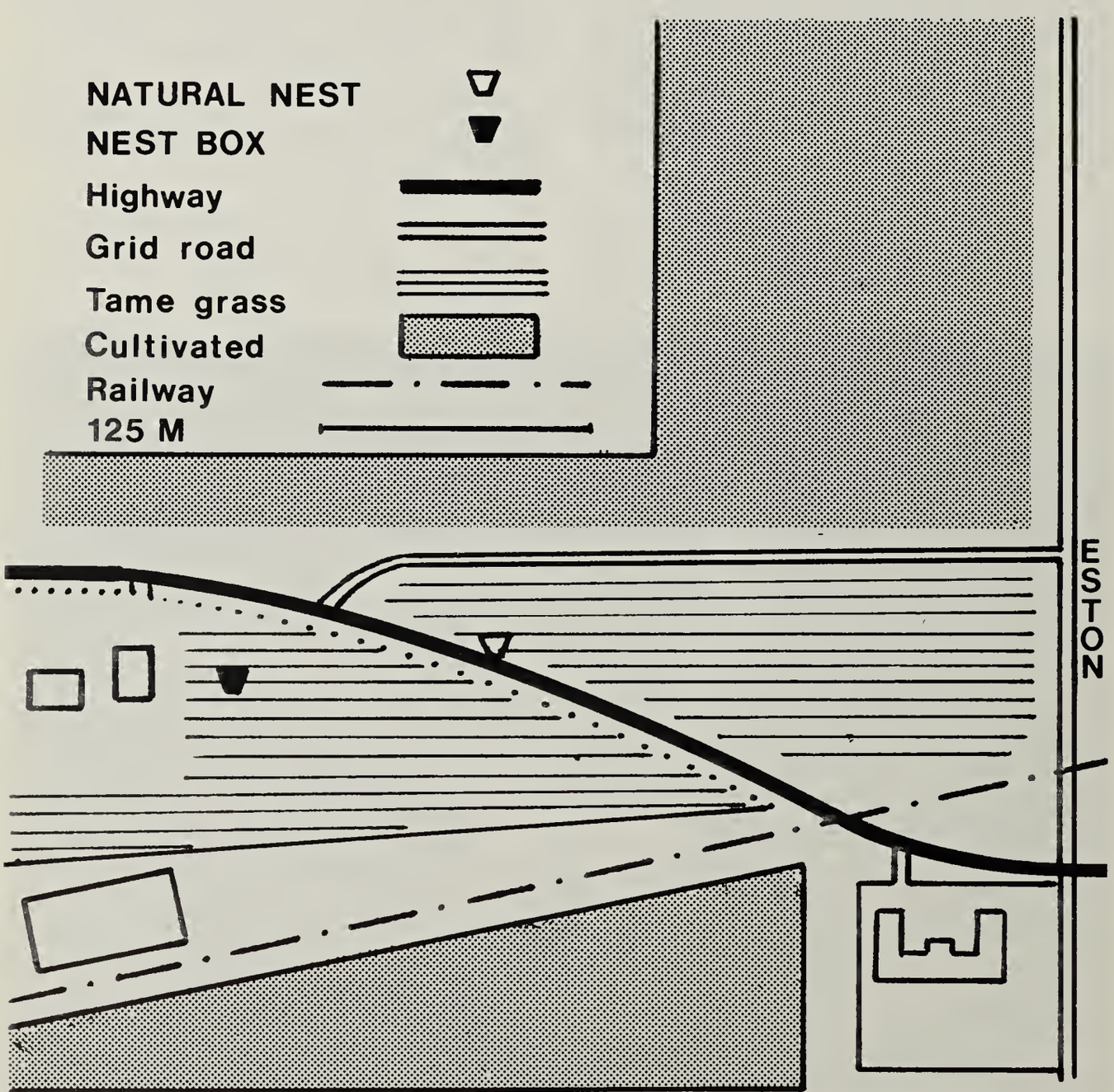

Figure 1. Map of Burrowing Owl nest relocation site

through cultivation. Cultivation destroys potential nesting holes, thus forcing the owls into marginal nesting sites such as road allowances. Nest sites along road allowances are poor due to the high mortality which owls experience from road kills.

"Operation Burrowing Owl" is a joint project sponsored by Saskatchewan Natural History Society, Saskatchewan Wildlife Federation, World Wildlife Fund, Wildlife Habitat Canada and Saskatchewan Parks, Recreation and Culture. The objectives of the project include surveying provincial Burrowing Owl populations, initiating landowner agreements for preserving owl habitat, increasing public awareness regarding the status of the Burrowing Owl and developing nest box schemes to enhance owl habitat and to learn about the behavior of Burrowing Owls.

The authors, while employed in the "Operation Burrowing Owl" program, relocated a roadside nest at Eston, Saskatchewan, that would have been destroyed by road construction (Fig. 1). We believe this is Saskatchewan's first successful transfer of a Burrowing Owl family and provides a technique which could be used in similar situations in the future.

Methods

The nest at Eston was located on Highway #44, within the western town limits. The burrow was an abandoned Richardson's Ground Squirrel hole located about 10 cm from the asphalt surface (Fig. 2).

This was at least the 2nd year this hole was occupied by owls and town residents reported finding up to four dead owls along the highway in 1987. The authors were informed by the Department of Highways on 15 June that this nest would likely be destroyed when they resurfaced the highway. Plans were made immediately to relocate the nest to a grassy area south of the highway owned by the Department of Highways, using a nest box for their new burrow. The new site was part of the owls' hunting range, about 130 m from

Figure 2. *Removing eggs from nest at roadside. John Pollock, left, Craig Palmer, right* *Greg Plewis*

their old burrow and away from the highway traffic. The relocation took place at 11:00 a.m. on 16 June 1988.

The nest box was installed in some loose fill dumped in the middle of the grassy area (Fig. 3). This provided the owls with a raised burrow about 20 cm above the surrounding area. The fill was a welcome addition, making for easy digging, however, the fill is not a prerequisite for establishing nest boxes. (Nest box plans are available from the Saskatchewan Natural History Society, or Saskatchewan Parks, Recreation and Culture, 3211 Albert Street, Regina, Saskatchewan. S4S 2J6)

Digging out the original nest and transferring the owls to the nest box was completed within an hour. The nest was dug out when the female was in the burrow to ensure her capture. A rag was stuffed down the hole so she would not fly out as the digging took place. The tunnel was about 0.5 m deep and about 1 m long. The nest had seven eggs and one newly-hatched owlet. The female, the owlet and eggs were placed in a cardboard box and transferred to the nest box. A cage was placed over the nest box entrance for 2 hours to ensure that the female remained in the nest box until she was accustomed to the new location. The old hole was filled to ensure that they would not return to it.

Results

When we visited the site 6 hours later at 8:00 p.m. the female emerged from the nest box and joined the male at the original nest site. The pair spent 1.5 hours looking at and flying around the former nest site. The female then returned to the nest box and the male followed her into the box shortly after.

Figure 3. *Installing the nest box. Left to right, Brian Janzen, Craig Palmer, John Pollock* *Greg Plewis*

The next morning the male was observed sitting at the entrance to the nest box. At this time it seemed the owls had taken over the nest box as their new nest.

On 12 July, C. Stuart Houston of Saskatoon banded seven young at this nest box, confirming that the transfer and subsequent hatch was successful (one young was lost form the original eight — cause unknown).

Discussion

Success of this transfer was influenced by five factors as follows:

Time

The shorter the disturbance period during transfer, the less stress there is for the owls. This procedure took under one hour. To keep transfer time to a minimum, the new nest box should be dug in and ready before the old nest is excavated.

Relocation site

The owls were relocated within their original range. The nest box was placed about 130 m from the original nest site, well within the species' average feeding territory of approximately 2.41 square km (1.5 square mi.).[1] This ensured that the male would find the box. As well, when the female emerged she could orient herself quite easily. When the female came out of the nest box, she circled the dirt mound and then flew directly to the old nest site.

Developmental Stage of the Young

An owlet was taken from the nest along with the eggs. The eggs were in the late stages of incubation with one owlet already hatched. At this stage most birds are much less likely to desert than during early nest stages. Relocating newly laid eggs may not have been successful.

Adult Relocation

Relocating at least one of the adult birds with the brood was probably the single most important aspect of the relocation. This ensured that at least one of the parent birds knew where the box was, and that the young and eggs were inside this new nest. This also ensured that incubation and care of the young underwent minimal interruption. The female may have been instrumental in helping the male find the nest so quickly.

Filling in the Old Burrow

The original hole was filled in after the relocation to keep the birds from returning to the original nest.

Conclusion

The success of this transfer suggests that the technique should be used again when nests are threatened with immediate destruction. However, the risk of nest desertion, especially in earlier nest stages, urges that moving of nests is undertaken only in situations where the nest is already in jeopardy. As more experience is gained with this type of transfer it will be possible to decide whether, for example, the risk of transferring a pair away from a road exceeds the risk of the owls being struck by cars.

Acknowledgements

We gratefully acknowledge the cooperation of the following people: Dale Hjertaas (Saskatchewan Parks, Recreation and Culture); Brian Janzen (Department of Highways) for his assistance and for reporting that the owls were in danger; Greg Plewis (Department of Highways) for photographs; Bill Schweitzer for construction of the nest box. The assistance of these people was invaluable to the relocation of the owls.

[1] HAUG, E.A. 1985. Observations on the breeding ecology of Burrowing Owls in Saskatchewan. M. Sc. Thesis, Univ. of Sask., Saskatoon.

MOUNTAIN CHICKADEE NEAR MARSDEN, SASKATCHEWAN

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During a Christmas Bird Count in west-central Saskatchewan, a Mountain Chickadee was observed at a feeder at the farm home of Eileen Graham, located about 6.4 km e and 4.8 km s of the Marsden town site. The bird was first noted 12 December 1987, and it was a regular visitor until 10 February 1988. The feeder consisted of a 1.5 m by 30 cm wooden ledge 1.5 m above ground level; its attachment to an east-facing kitchen window sill afforded close-up observation. Frequent visits of the Mountain Chickadee were witnessed by the author on Boxing Day, 26 December 1987 between 11:00 and 11:30 a.m. and again on 28 December 1987 for over an hour during mid-morning. Attempts to photograph the bird were unsuccessful. A search of the large, well-treed yard failed to produce further evidence of the Mountain Chickadee, however more than 50 Black-capped Chickadees were present, plus a flock of Evening Grosbeaks and several Hairy and Downy woodpeckers.

Mountain Chickadee at Marsden, Saskatchewan, on right. Black-capped Chickadee on left *Eileen Graham*

Saskatchewan Mountain Chickadee sightings in relation to general range

Prior to 1987 there was only one recorded Saskatchewan sighting. At Skull Creek the late Steve Mann had a Mountain Chickadee at his feed trays from 3 December 1966 through 22 April 1987.[5] Belcher further mentioned this sighting in her biographical article about this well-known rancher-naturalist, and the species was listed as "hypothetical" in a review of the "Field

Check-list of Saskatchewan Birds," based on information received to 1 January 1981.[1,3]

The most obvious diagnostic field marks of the Mountain Chickadee are the distinct white eyebrow line extending from the base of the bill, the pale gray sides, with back, flanks and sides tinged with buff.[7,8] The species' preferred habitat is open coniferous forest, but it is known to forage in deciduous woods and thickets and is found in tree crowns to a much greater extent than the Black-capped Chickadee.[2] The call is a harsh *chickadeer-deer, cha-dee-dee-dee*, and the whistle a three or four syllable *fee-bee-bee*, the first note always highest.[2] Mountain Chickadees range throughout the mountains of western North America from northern British Columbia and southwestern Alberta, south to northern Baja California, Arizona, New Mexico, and southwestern Texas, though possibly less prevalent on the coastal slope.[2] They are permanent residents of the Rocky Mountain regions of Alberta, regularly descending to lower altitudes and foothills in winter.[7] They have been reported almost annually in Calgary from 1961 to 1970, with further sightings in Lethbridge in 1965 and Waterton in 1966 and 1967.[6]

At Marsden, while the Black-capped Chickadees frequently disputed their own position in the feeding hierarchy, at no time were they observed harassing the Mountain Chickadee and the latter in turn appeared to totally ignore the Black-capped species (probably a wise action if one is out-numbered 50:1). Only one photograph suitable for proof of identification was obtained by Eileen Graham and credit must be given to Ian Shirley, Veterinary Pathology Photography Lab, for an enlargement from the negative which appears with this article. Together with sightings at Fort Qu'Appelle and Skull Creek during the same count period, this photograph should lend some support to an argument for removing the species' hypothetical status.[4]

[1] BELCHER, MARGARET 1969. Steve Mann, rancher-naturalist of Skull Creek (1895-1968). *Blue Jay* 27(3):122-128.

[2] GODFREY, W.E. 1986. The birds of Canada. National Mus. Can., Ottawa.

[3] HOUSTON, C.S., M.I. HOUSTON and J.B. GOLLOP 1981. Saskatchewan bird species — hypothetical and rejected. *Blue Jay* 39(4):196-201.

[4] HOUSTON, M.I. 1988. 46th annual Saskatchewan Christmas bird count — 1987. *Blue Jay* 46(1):9-14.

[5] MANN, S.A. 1967. Mountain Chickadee in southwestern Saskatchewan. *Blue Jay* 25(2):76.

[6] SADLER, T.S. and M.T. MYRES 1976. Alberta birds 1961 - 1970. Prov. Mus Alberta Occ. Paper 1.

[7] SALT, W.R., and J.R SALT 1976. The birds of Alberta. Hurtig Publishers, Edmonton.

[8] SCOTT, S.L. 1983. Field guide to the birds of North America. National Geog. Soc., Washington.

BLUEBIRDS AT ABERNETHY: HISTORY AND 1988 RESULTS

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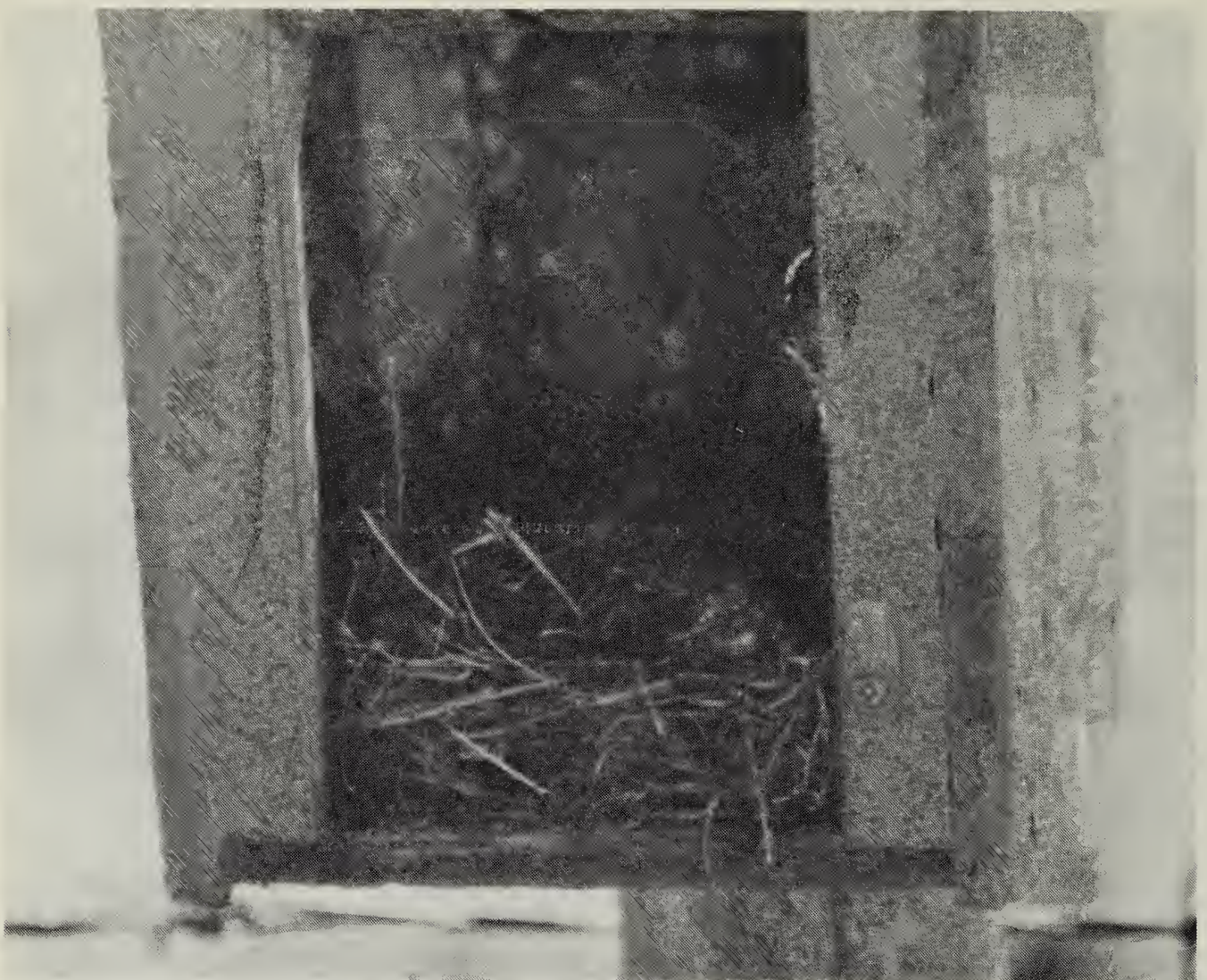
Abernethy is located in southeastern Saskatchewan, 130 km from Manitoba and 190 km from the United States. It is within the modern nesting range of both the Mountain and Eastern bluebird but the latter is much less common here. I have not yet had an Eastern Bluebird in my houses, so this article refers only to the Mountain Bluebird.

A Bit of History

Bluebirds were unknown in this area until the early 1940s according to what I was told by my parents. About that time my father saw his first bluebirds while he was getting the cows from a partly wooded pasture.

My first experience with bluebirds occurred about 1945 when I was growing up on our farm 4 mi. southeast of Abernethy. One day a pair of bluebirds appeared on the fence near the woodpile. Somehow I knew that bluebirds would nest in a bird house. Perhaps I learned this from our new Birds of Canada which my mother ordered from Eaton's Catalog.[1] I made a bird house out of an apple box and mounted it on a lone aspen near the yard. The bluebirds used it that year. Their nesting material was mainly strips of fine, soft bark from the woodpile. Most nests are constructed with grasses.

Male Mountain Bluebird at Abernethy, Saskatchewan *Joy McKen*



Inside of nest box with four young bluebirds *Joy McKen*

In following years bluebirds nested in places such as the twine box of the binder and the interior of the combine. One year we were saddened when a pair of dead bluebirds flowed into a pail with oats from the bin. They had entered the bin through a knothole and could not find their way out.

About 1950 I mounted a bird house on a post 10 m from the kitchen window. The bluebirds used this house for about 10 years. Then one year there was a snow storm after the bluebirds were back investigating their house. They were not seen after that. That was the end of the first chapter in my bluebird experience. My parents moved from the farm, and I had already been away for a few years employed in Alberta.

In 1982 I returned to Abernethy and in 1984 I decided to renew my bluebird activity. I built 12 houses and mounted them on fence posts about 300 m from a vacant farm yard. I had no bluebirds in 1984, one nest in 1985, none in 1986 and one in 1987. I also had about six Tree Swallow nests each year. In 1987, the only year in which the bluebirds attempted a second brood, House Sparrows destroyed the eggs. I decided it was time to move the houses to a better habitat, increase the number of houses and change to the paired house system. In the summer of 1987 I built 12 more houses and moved all the houses to a new location for the 1988 season.

The 1988 Bluebird Trail and Results

The houses were located on fence posts bordering a 320-acre grazed pas-

Table 1. RESULTS FROM ABERNETHY BLUEBIRD TRAIL, 1988.
The trail was 1.5 mi. (2.4 km) long and had 12 pairs of houses.

	Mountain Bluebird first brood	*Mountain Bluebird second brood*	*Tree Swallow*
Nestings	6	6	9
Eggs	34	28	51
Hatched	33	26	50
Fledged	33	26	46
Average clutch	5.67	4.67	5.67
Hatching rate	97%	93%	99%
Date of first egg: range	1 May - 21 May	15 June - 5 July	26 May - 17 June
median	13 May	28 June	27 May
Incubation period	13 days	13 days	13 days
Hatch to fledge period	19 - 21 days	18 - 20 days	18 - 20 days

ture with a few small aspen groves (good bluebird habitat). The 24 houses were arranged in 12 pairs on half the perimeter of the pasture. The houses in each pair were about 10 m apart and the pairs about 200 m apart. I monitored the houses every 5 days which allowed me to make good estimates of the incubation period and the period during which the young were in the houses.

It was a good year for bluebirds with 59 fledged compared to 46 Tree Swallows. The results are summarized in Table 1. Not all the bluebirds had second broods although the table seems to indicate that. Four out of six had second broods; the other two late broods were by newcomers to the houses. Hence there were eight pairs of bluebirds responsible for the 12 nestings. The four pairs which had two broods stayed in the same boxes for the second broods. I did not clean out the old nests between broods; the new nests were built on top of the old. The two pairs which did not have second broods were the latest nesters and had the smallest clutches. The most common clutch size was six for first nesting attempts of both bluebird and Tree Swallow, and five for second clutches of bluebirds. The hatching rate given in the table is also the fertility rate as there was no predation of eggs.

The earliest bluebird started building about 18 April, finished about 22 April and laid the first egg 1 May. The fastest worker started about 3 May, finished about 7 May and laid the first egg 10 May. The slowest worker started about 22 April, finished about 3 May and laid the first egg 21 May. The average period from start of nest building to first egg was about 12 days for first broods, and from fledging to first egg of second brood was about 9 days.

The incubation periods are based on several instances where the eggs were hatching on the monitoring day. There were three nests for swallows, three for first brood bluebirds and two for second brood bluebirds. In every case the period was 13 days.

Table 2 gives the nesting count in terms of house pairs. The paired house system worked well. There was no evident conflict between swallows and bluebirds, and there were no cases of the same species in both houses of a pair.

Table 2. NESTINGS IN PAIRED HOUSES

Occupants	*Bluebird 1st brood*	*Bluebird 2nd brood*
Bluebird - swallow	3	4
Bluebird - bluebird	0	0
Swallow - swallow	0	0
Bluebird - vacant	3	2
Swallow - vacant	5	4
Vacant - vacant	0	1
Swallow - wren	1	1

Looking Ahead

I built 24 more houses for the 1989 season; they will complete the trail around the perimeter of the pasture. This brings the total to 48 houses (24 pairs) on a 3-mi. (4.8 km) loop, and will not increase the walking distance compared to covering half the loop and then backtracking.

The 1988 season was the beginning of an on-going experiment in birdhouse design. Two thirds of the houses are conventional; the others are test houses of three different designs. They are more open, having wide entrances on two or more sides compared to the circular 1.5-inch (38 mm) entrance of the conventional houses. The entrances are also more hidden by the overhanging roof. I had hoped that bluebirds would show a preference for the test houses, and Tree Swallows for the conventional, thus further reducing competition between them. For the 1988 season 22% of swallow nestings and 33% of bluebird nestings were in the test houses. It will likely take about 5 years before valid conclusions can be drawn.

There are three factors which I believe contributed to bluebird success this year: good habitat, paired houses, and concentration of houses. With 16 houses (8 pairs) per mile (10 houses per km), the bluebirds can nest in loose colonies which they seem to like.[2]

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[2] WALLEY, W.J. and W.L. CLARK 1985. The Eastern Bluebird at Dauphin, Manitoba. *Blue Jay* 43(3):160-168.

Ron Bittner at one of his test houses *Joy McKen*

JUNIOR NATURALISTS

Wow, listen to the music," said Mark Magpie. I didn't know the prairie was supposed to sound like this."

Phillipa Fox and Mark Magpie stood in a wide open place. The whole world seemed to be made of grass, sky, wind and water. Thousands of birds were singing.

"Will will willet! Will will willet!" called one bird as he flew right overhead. His wings showed a flashy black and white pattern, but when he landed next to the two friends they were surprised to see he was a plain brown bird.

"Well well welcome!" he called.

"Thankyou," said Phillipa Fox. "You must be Will Willet, our guide here at Last Mountain Lake National Wildlife Area."

"Right, you're right," he said.

"I'm glad to be here to see a place where there is still open prairie," said Phillipa Fox. "It's beautiful, all birdsong and wildflowers. Am I ever glad this piece of wild prairie was saved."

"Yes, yes, and of course, the lake, too," agreed Will. "We Last Mountain Lake birds live in the oldest established wildlife refuge in North America. It was 100 years old last year. It is also considered to have international importance. You see there are so few good places left for birds to rest and eat and nest. Birds from 27 countries stop here. Prince Philip of England, himself, came last year to join our centennial celebration. It's definitely a quality establishment."

"Well then lets celebrate!" yelled Mark and took off low over some cattail rushes.

"My, my, I wouldn't fly there if I were him," said Will.

Sure enough, a second later Mark Magpie came tearing back towards his friends. Two Yellow-headed Blackbirds were diving at him and pecking his back.

"Ow! Stop it!" yelled Mark. "I'm not after your babies. Leave me be! Ouch!"

"It's much better not to disturb nesting birds. They may take exception to your presence. Young birds are so easily injured," said Will, as Mark disappeared from view with the blackbirds after him.

"I wish some people I know would learn that," said Phillipa Fox. Suddenly she put her nose in the air and sniffed hard. "Fire! I smell fire. It's no barbecue either. We'd better find Mark."

Soon Phillipa Fox and Will Willet were traveling through swirling clouds of smoke. Sparks and bits of burning grass blew by. It was hard to breathe. Their eyes hurt. The fire roared towards them. It sounded like a freight train.

Phillipa dodged into the lake and lay low in the water. Will flew high into the air. In a few minutes the fire had gone by. Everything looked black and dead.

Phillipa climbed out of the water and shook herself. It was very quiet. Here and there a stick or clumps of grass still smoldered.

"Will!" she called "Will Willet!" There was no answer. "Mark Magpie, where are you?" She started to run through the ashes. "Will! Mark! Mark Magpie!" Soon her wet fur was covered in ashes. The hot ground hurt her feet.

"Hey Phillipa, Phillipa! We're ok, ok?" yelled Mark, flying right over her head. "Don't push the panic button. Will Willet and I are right here, just fine and dandy."

"Oh, Mark, I thought you were dead, and you too, Will. Am I ever glad to see you," cried Phillipa. "But this is terrible. The prairie is all ruined!"

"No, no, not at all. Please compose yourself. All is not lost," said Will Willet.

"What do you mean?" asked Phillipa. Just look at it!"

"It may not look like it, but fire is actually quite good for the prairie. It's made for fire so to speak. The wild prairie grasses renew themselves better with fire. Very little has been hurt. The gophers hid safely in their holes. The larger animals escaped as you did. The birds flew to safety."

"Anyway," said Mark "it wasn't very big. I vote we get out of these ashes. You're filthy Philip. I've got a question for you. How does a Red Fox get clean?"

"How?" asked Will Willet.

"She writes on herself so she can be read all over" said Mark. "Read, red, get it?"

"That's a terrible joke," groaned Phillipa Fox.

"Well, let's get out of the ashes then and enjoy this place," said Mark. "I saw Canada Geese on the lake. There's cormorants and gulls on the islands, Vesper Sparrows in the grass, and kingbirds in the trees. Let's go and look."

"Capital idea!" agreed Will Willet.

— *Karen Rispin,* Box 507, Dalmeny, Sask. S0K 1E0

NATURE LIBRARY

DIGGING DINOSAURS

JOHN R. HORNER and JAMES GORMAN. 1988. Workman Publishing, New York. 200 pp. Hardcover.

"I don't give a damm" what killed the dinosaurs, is a famous quote of John Horner, a paleontologist at the Museum of the Rockies in Bozeman, Montana. I remember that when I first heard this I was taken aback a bit because I was (and still am) fascinated by this question. Horner emphasizes in his new book *Digging Dinosaurs* that no matter how you look at the question of extinction, the dinosaurs as a group lived for 140 million years; so he says, "let's stop asking why they failed and try to understand why they succeeded."

Because of Horner's work, the interpretation of dinosaur fossils in regard to the animals' physiology, growth and social habits has changed dramatically. No longer are they seen as lethargic and mindless reptiles. Now we can look back more than 70 million years and report that a certain group of duck-billed dinosaurs were "good mother lizards" as Horner puts it.

Horner's story began in 1978 when he and long-time friend and associate Bob Makela, a high school teacher, followed Marion Brandvold, a local resident of Choteau, Montana, to a site that yielded some very small dinosaur bones. So small in fact that they could have only come from a baby. Previous to this discovery, there were relatively few specimens of sub-adult dinosaurs and not much was known about them. Horner's recovery of nests (and the remains within them) in the succeeding years showed that at one time there were nesting grounds belonging to 10,000 dinosaurs in the area he searched.

There are two dinosaurs found in the Montana sites that are known to have laid eggs: *Maiasaura*, a duck-billed dinosaur, and *Orodromeus*, a small (about 7 feet long) bipedal dinosaur. With regards to *Maiasaura*, an entire growth series has been attained from embryonic to full adult skeletons. Because of the high number of nest recorded, Horner established that not only were they herding animals but they also grew at a rate similar to that of birds and mammals. Thus inferences are made that at least some dinosaurs were endothermic (possessed internally constant temperature) and not ectothermic (body temperature controlled by external factors) as previously thought by paleontologist.

The book begins with Horner's discovery of the eggs and concludes with his current activities. Along with its account of factual discoveries, it gives personal insights into paleontology in general and into John Horner himself. The illustrations in this book are well done, capturing all the detail that the reader needs. The picture that first caught my eye was one that showed the small size of two dinosaur bones by

comparison with a tab from a Rainier Beer can. This shows two of the facets of dinosaur digging - bones and beer (the former are abundant if you look in the right place, the latter is an extremely good coolant for a paleontologist on a hot summer day)!

Another example of Horner's initiative is his search for research grants (a necessity for almost all paleontological endeavors). In the beginning, he needed $10,000 for field work. Knowing that the institution that he then worked for, Princeton University, was short on funds, he and Makela contacted the Rainier Beer Company for possible financial support. (Horner and crew supported the Rainier Beer Company in the field, why not have this same company assist in their digging?) They were then notified by the head of the geology department that free-lancing in search of funds was not allowed. Soon after this discussion, Princeton came up with the $10,000.

Digging Dinosaurs is a book that introduces technical information only when necessary. Though it digresses a lot into interesting side issues, it is very readable. Paleontology, unlike many other scientific endeavors, encompasses many disciplines and is in contact with many more. In the book, there are bits about geology, stratigraphy, physiology, histology, how collecting and preparing are performed and a little history of paleontology. The background information is just enough to make the book fully comprehensible.

With the dinosaur craze at its peak, there are many books on store shelves that clinically illustrate "all there is to know" about dinosaurs. These are informational, but often boring. But if you want to know more about the insight into the process of paleontology; how it works, and how scientists draw their conclusions, this book (which focuses on a central theme, that of baby dinosaurs) is one of the best around. It is truly enjoyable reading. – Reviewed by *Tim Tokaryk*, Saskatchewan Museum of Natural History, Regina. S4P 3V7

GHOST OF THE FOREST, THE GREAT GRAY OWL

MICHAEL S. QUINTON. 1988. Northland Press, Flagstaff, Arizona. 10.5 x 9", 66 color photos, 99 pp. Paper $19.95.

This is a highly personalized account of a wildlife photographers's experiences with Great Gray Owls in Yellowstone National Park, Wyoming, and Island Park, Idaho. Michael Quinton, a free-lance photographer who lives in eastern Idaho, watched and photographed Great Grays intensively over 5 years. Most of his work was done in Island Park at three or more nests, including one nest-site he prepared himself by trimming the top of a huge broken snag. As he had hoped, owls nested successfully on this snag. Quinton first reported on this experience in a notable photo-essay in *National Geographic* for July 1984.

By spending a lot of time with his subjects (45 days in a blind at one nest) Quinton was able to capture some marvelously intimate views, documenting some behavior which, to my knowledge, has not been previously recorded. I am thinking especially of three shots of a pair engaged in mutual preening; the birds are totally relaxed and absorbed in each other, yet the photos are clear and sharp. Also, this aspect of Great Gray Owl courtship behaviour is carefully described, something few photographers take time to do. Quinton's photos demonstrate his ability to get close to these remarkable birds without interrupting their activities, good evidence that he is an experienced and sensitive naturalist as well as a determined photographer. His photos of an owl bathing in a woodland stream prove my point.

The photos in this sumptuous book, which was printed in Korea, appear to be perfectly reproduced. This is a lavish spread of owls. Of the 66 color photos (including front and back covers) two are double-page and 22 are full-page or more. (Incidentally, eight watercolor sketches by one Monte Varah depict owls and their habitat with charming fidelity). Careful planning, a good sense of composition and superb photographic technique are evident in nearly every photo. Quinton's book reveals much of the world of the Great Gray Owl in the western United States. Birders in that region will appreciate the specific directions provided for finding Great Gray Owls in Quinton's favorite haunts. In terms of breeding habitat, these birds are in big tree country — Douglas Fir and Lodgepole Pine. The open-galleried forests of this region appear easier to get around in than the tangled tamarack bogs which are used by the owls I have studied. Note, too, that the main prey species is a pocket gopher. Some interesting information about pocket gopher habits and the methods whereby owls capture them are included. There are several excellent photos of Great Gray Owls in pursuit of, or carrying, what Quinton calls those "terrestrial, tunneling, flower-snatching pocket gophers." We read about a number of other denizens of owl habitat, including marten, Moose, Elk, Red Squirrel, Gray Jays, Trumpeter Swan and even a jumping spider, but none of these are in the photos.

There a few minor inaccuracies and some grammatical slips in the text that should have been caught by routine editing. My impression is that the text is pretty much as the author wrote it. It is perhaps too much to expect a top-notch photographer to be an equally competent writer. Quinton is able to convey his excitement and enthusiasm through some spirited writing, but often his style is rather simplistic. Some readers will feel uneasy about lines such as the female owl with a "look of revenge in her eyes" and "giving me the evil eye" and "she had figured I wouldn't try anything stupid," but generally one is able to understand what is happening. I found no typos.

This book has some strong conservation messages. Quinton added a last-minute note to the text, warning about plans to clearcut a key nesting area in 1988. He points out that the large trees in old-growth forest are essential to Great Gray Owl welfare. The large trees eventually die, break off and provide the snag nest-sites that Great Gray Owls in this area depend upon. Several times the author identifies "wilderness forest" as prime habitat, a useful designation. He writes: "It is hoped that greater awareness will mean greater concern for the bird's continued existence." This book helps meet those worthy objectives. – Reviewed by *Robert W. Nero*, Wildlife Branch, Box 14, 1495 St. James Street, Winnipeg, Manitoba. R3H 0W9

THE BALD EAGLE: HAUNTS AND HABITS OF A WILDERNESS MONARCH

JON M. GERRARD and GARY R. BORTOLOTTI 1988. Western Producer Prairie Books, Saskatoon and Smithsonian Institution Press, Washington. 178 pp. Paper $18.95.

Naturalists in western Canada should be very proud of their prominent contributions to the well-written, well-illustrated single-species nature books published by the Smithsonian Institution Press. First was Robert W. Nero's The Great Gray Owl, phantom of the northern forest, in 1980, followed by Nero's Redwings in 1984 and J. David Henry's Red Fox: the cat-like canine in 1986. Appropriately, Western Producer Prairie Books of Saskatoon has obtained Canadian publishing rights for the fourth of these major Canadian-content books.

This book maintains the high standards achieved in the earlier volumes. Again, information of the highest scientific validity is presented in a way the interested layman can understand and enjoy. The photographs, as in the other books, are superb — though this time not in color.

It is always a thrill for anyone, no matter how slight his or her interest in birds generally, to see a Bald Eagle. Yet the Bald Eagle has become important for more than aesthetic reasons. When Bald Eagle productivity began to decline drastically between 1947 and 1952, another Canadian, Charles Broley, reasoned that new pesticides might be responsible. Broley was correct, and his work formed much of the basis for Rachel Carson's landmark 1962 book, Silent spring. By the time DDT use was banned at the end of 1972, the Peregrine Falcon had ceased to breed in the eastern half of the continent and the productivity and numbers of eastern populations of Bald Eagle and Osprey had fallen to a small fraction of that of pre-DDT times. Egg shells of all three species were thin and fragile, in proportion to their DDT exposure. Chapter 1 succinctly recounts this important conservation story.

Subsequent chapters deal with Bald Eagle anatomy, flight, feeding, distribution, territory, nest building, eggs, young, migration, wintering, and management. Appendices give data such as measurements, food supply, clutch and brood size, and growth curves. We also learn that the incubating female leaves her eggs for shorter periods when wind-chill is high and that Bald Eagles tend to winter where the temperature is just at the freezing mark, although immatures winter where it is somewhat warmer.

The literature on Bald Eagles has been thoroughly reviewed, allowing interesting comparisons to be made. The widest Bald Eagle nest, in Florida, was over 9 feet in diameter and 20 feet deep. An Ohio nest was used for 35 years.

This book results largely from continuous, log-term studies of the 20 to 25 breeding pairs and associated immature Bald Eagles at Besnard Lake, Saskatchewan. These eagles have been studied since 1968 by Doug Whitfield and Jon Gerrard, the Gerrard family, and an ever-changing crew of volunteers who have come from far and wide, every summer, without pay, to observe and record. Gary Bortolotti first came to Besnard Lake from Toronto in 1976, then spent four summers of concentrated study there, 1979 through 1982, to obtain a Ph. D. degree. Amongst other things, Bortolotti's measurements showed that juvenal

eagles have longer wings and tails than the full-plumaged adults.

Gerrard, an enthusiastic amateur, and Bortolotti, the biologist, share many of their insights and personal feelings by recalling an important field experience to begin each chapter. Gerrard is now a respected medical researcher, director of the Manitoba Institute of Cell Biology and director of the medical student research programs at the University of Manitoba. Bortolotti is an assistant professor of biology at the University of Saskatchewan.

I remember well my first encounter with Jon Gerrard. He was 8 years old. His parents, John and Betty, enthusiasts newly arrived from England, were telling me of their sighting of a probable Boreal Owl. I asked some questions. An unusually perceptive little Jon slipped away, then soon returned, having looked up Peterson's Field Guide and studied the differentiating features. He said "Mother, I rather think the owl was a Saw-whet Owl, as Dr. Houston has intimated by his questions." Jon has lived up to this early promise. As he grew older, Jon was my helper on a number of banding expeditions, but it wasn't long before he and Doug Whitfield had branched out so that eagle studies used up all of their spare time.

That devotion and dedication to a single important bird species should be maintained over such a long span and produce a book of this quality is a great satisfaction to all Saskatchewan naturalists. You will read the book with interest, and keep it as a reference. — Reviewed by *C. Stuart Houston*, 863 University Drive, Saskatoon, Saskatchewan. S7N 0J8

PRAIRIE NEST RECORD CARD SCHEME

The Prairie Nest Record Card Scheme requires additional contributors who are interested in birdlife and would be willing to record information on special cards about the bird nests they find. The Prairie Nest Record Scheme applies to Alberta, Manitoba, Saskatchewan and Northwest Territories.

At the end of the nesting season the cards are to be returned to the coordinator. A report is issued yearly, listing the species, number of nests, contributors and information about use of cards from the file.

Researchers, university graduate students, biologists and government agencies, etc., use data on species they are studying.

For information, blank nest record cards, and instruction card, write to:

H.W.R. Copland, Coordinator
Prairie Nest Record Card Scheme
c/o Manitoba Museum of Man and Nature
190 Rupert Avenue
Winnipeg, Manitoba
R3B 0N2

SOCIETY NEWS

AWARDS 1988

The Larry Morgotch Award this year went to Clare Hume of Saskatoon. Lise and Fernand Perrault of Val Marie were the recipients of the Conservation Award. The Cliff Shaw Award went to John Hudson of Saskatoon for another article in the series of rare and interesting plants notes which he contributes to *Blue Jay*.

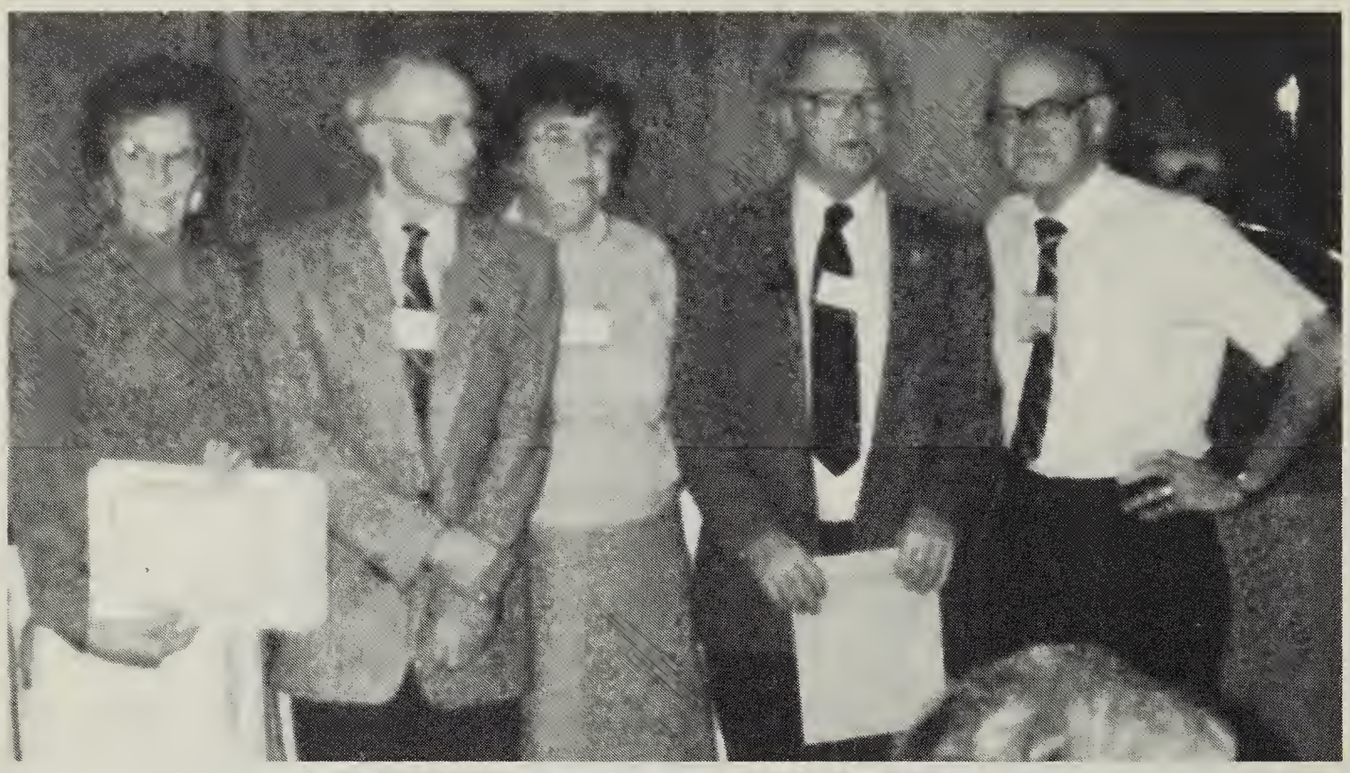
Five new Fellows of the society were selected this year. They were Fred Bard, Jim and Shirley Jowsey, Bob Nero and Jim Slimmon.

Clare Hume receiving Larry Morgotch Award from Michael Williams Lloyd Saul

Bob Ewart presented the Conservation Award to Lise and Fernand Perrault of Val Marie *Lloyd Saul*

A new item of interest was added to the awards presentations this year by the presentation of a beautifully designed, hand-made President's Gavel to the new president by the outgoing president, Lorne Rowell.

John Hudson received the Cliff Shaw Award from Mary Gilliland *Lloyd Saul*



Fellows of the Saskatchewan Natural History Society, left to right, Fred Bard's secretarty accepting the fellowship on his behalf, Jim and Shirley Jowsey, Robert Nero and Jim Slimmon *Lloyd Saul*

Lorne Rowell presented the new President's gavel to Lloyd Saul

SASKATCHEWAN NATURAL HISTORY SOCIETY

Statement of income for the year ended September 30, 1988
(Including Bookshop)

Revenue:		
Membership - regular	18,027.12	
Membership - Sustaining and Patron	2,645.00	
Bookshop Sales	23,045.18	
Donations - general	2,364.50	
Grants General	875.00	
Interest - received	8,104.03	
Tour income	8,481.22	
Sales Special Publication	1,367.84	
Sales Burrowing Owl T-shirts	1,014.00	
Sales Lapel Pins (Blue Jay)	886.26	
Sales Habitat Canada Pins	953.28	
Sale BJAY Advertising	490.00	
Grant CWS - Blue Jay	4,000.00	
Grant - WWF Ferruginous Hawk	4,000.00	
Grant Sask. Trust	70,000.00	
Grant - WWF Prairie Chicken	2,900.00	
Grant - Wildlife Habitat - Burrowing Owl	15,675.00	
Grant - WWF Burrowing Owl	10,240.00	
Grant - SPRC Endangered Species	4,000.00	
Grant - general research	500.00	
Grant - WWF Sage Grouse	2,900.00	
Grant - Raptor Education	10,000.00	
Grants - Piping Plover	6,500.00	
TOTAL REVENUE		**198,968.43**
Cost of Sales:		
Burrowing Owl T-shirts	570.72	
Bookshop book purchases	18,673.82	
Bookshop inventory change	1,059.96-	
Total cost of sales		18,184.56
Gross Profit		**$180,783.85**
EXPENSES:		
Advertising and Promotion	1,507.19	
Audit costs	500.00	
Conservation Activities	12,463.65	
Bank charges	263.69	
Computer expense	984.67	
Honoraria	3,346.48	
Meeting - annual	273.56	
Meeting - summer	188.34	
Meetings - board & other	311.10	
Memberships	185.00	
Misc. Office & Admin.	3,016.94	
Office equipment	1,650.13	
Office Supplies & Stationary	970.39	
Photocopy & printing	1,843.65	
Postage & Express - general	1,966.62	
Blue Jay - printing	16,898.55	
- postage	1,130.13	
Blue Jay News - printing	3,761.75	
- postage	1,796.57	
Special Publications Cost	67.35	
Telephone	1,996.65	
Travel	1,887.37	
Wages	26,000.08	
Secretarial - casual	1,346.88	
Employment expense	2,998.34	
Wages - biological assistants	10,253.29	
Employee Training	141.00	
Employment expense - biological assistants	407.30	

Burrowing Owl Project	21,963.94	
Sagebrush Vole Project	611.91	
Herptile Project	6,228.66	
Entomological Survey	102.45	
Shorebird Surveys	3,524.97	
Sage Grouse Project	12,480.00	
Piping Plover Project	7,295.00	
Ferruginous Hawk Study	4,644.70	
Greater Prairie Chicken Study	1,989.85	
Raptor Education Project	10,000.00	
Research	361.09	
Interpretive Trails	7,908.26	
Habitat Conservation	3,444.54	
TOTAL EXPENSES		178,661.80
Operating Profit		2,122.05
Other Income/Expenses		0.00
NET INCOME		**$ 2,122.05**

SASKATCHEWAN NATURAL HISTORY SOCIETY

Balance Sheet for the year ended September 30, 1988 (Including Bookshop)

ASSETS:		
Bank - Current		$ 33,651.40
- Savings		20,263.36
Bank - Current (Bookshop)	1,662.71	
Cash on Hand (Bookshop)	140.00	
Bank Savings (Bookshop)	0.00	
Bookshop stock on hand	9,098.56	
Investments - Regular Term	82,326.78	
- Life Membership	26,597.19	
- Manley Callin bequest	143,697.37	
Accounts Receivable	9,961.74	
Equipment and Fixtures	17.00	
Prepaid Expenses	230.00	
TOTAL ASSETS		**$327,046.11**
LIABILITIES:		
Accounts payable		26,782.50
Customer prepaid account	4.50	
Prepaid from Sask. Trust		22,891.75
Habitat Conservation		24,388.39
Heritage Marsh Trust		7,679.88
NCC Ecological Reserve Trust		1,050.00
Reserve computer purchase		3,830.70
Reserve Special Publications		4,775.00
CWS PWIC Webb Trust		2,920.55
Life Membership Trust Fund	26,597.19	
Manley Callin Bequest Trust		143,697.37
Endangered Species Project		18,670.41
Interpretive Programs Project		683.80
Natural History Classes Project		661.15
E&H Tax payable	142.41	
TOTAL LIABILITIES		**$284,775.60**
EQUITY:		
NET WORTH:		40,148.46
Year to date profit	2,122.05	42,270.51
Total liabilities and equity		**$327,046.11**

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